



California Water Plan

Review of Groundwater Update 2013



CWP Groundwater Caucus Meeting
April 12, 2013

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Acknowledgements

DWR Region Offices and Headquarters

Headquarters

- Lew Moeller
- Mary Scruggs
- Evelyn Tipton
- Eric Senter
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South Central Region Office

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Northern Region Office

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- Roy Hull
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North Central Region Office

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Southern Region Office

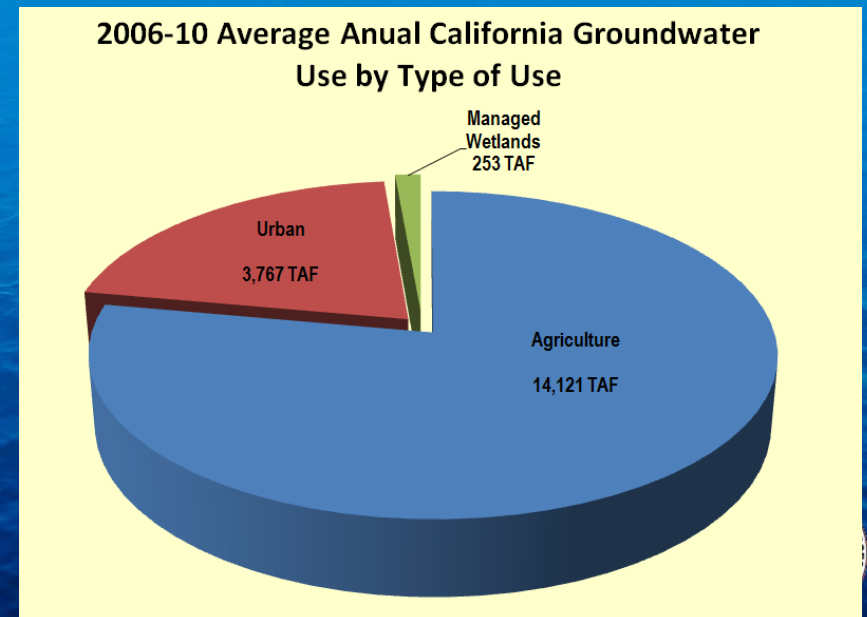
- Tim Ross
- Jack Tung



Talking Points

Groundwater Report Review

- Outline Overview
- Introduction
- Findings
- Recommendations...based on GW Caucus & Work Team Members input
- Statewide Groundwater Content
- Hydrologic Region Content
- Comments Questions



1. *Introduction*
2. *Findings*
3. *Recommendations*
4. *Statewide Groundwater Update*
5. *Hydrologic Region Groundwater Update*

- 5.1. *North Coast*
- 5.2. *San Francisco*
- 5.3. *Central Coast*
- 5.4. *South Coast*
- 5.5. *Sacramento River*
- 5.6. *San Joaquin River*
- 5.7. *Tulare Lake*
- 5.8. *North Lahontan*
- 5.9. *South Lahontan*
- 5.10. *Mountain Counties*
- 5.11. *Delta Overlay*

CWP Update 2013

Groundwater Content



- Appendix A: Methods and Assumptions*
Appendix B: Change in Storage T.M.
Appendix C: CASGEM Basin Prioritization
Appendix D: DWR-ACWA C.M. Survey
Appendix E: Land Subsidence



5.x.1 Groundwater Supply and Development

- Alluvial Aquifers
- Fractured-Rock Aquifers
- Well Infrastructure and Distribution
- CASGEM Basin Prioritization

5.x.2 Groundwater Use

- By Region: HR, Planning Area, & County
- By Use: Ag, Urban, MW

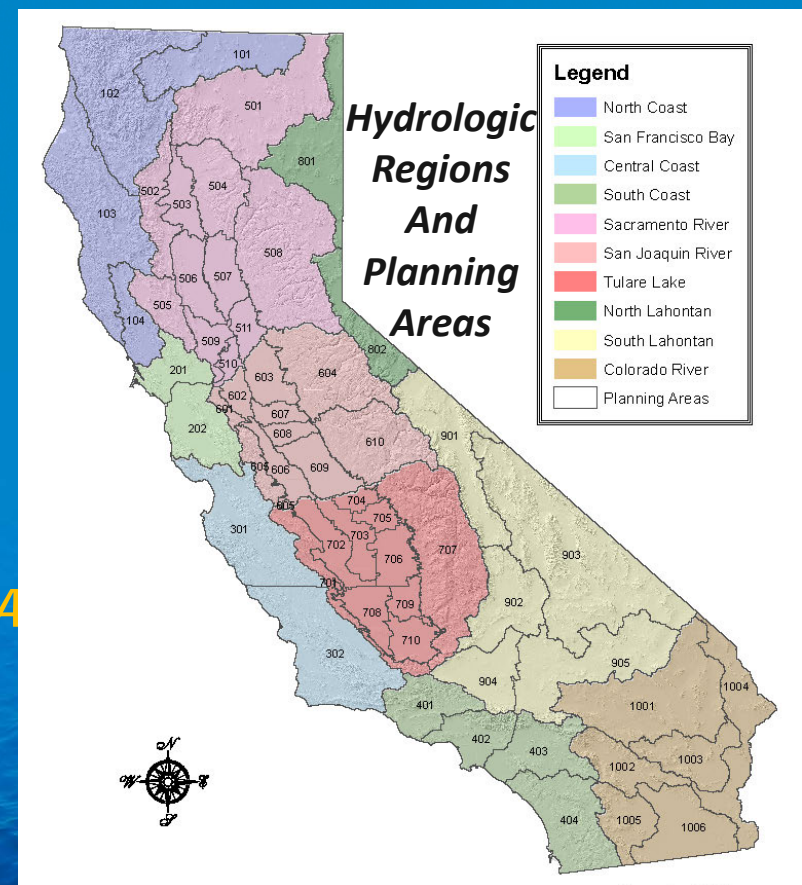
5.x.3 Groundwater Monitoring Efforts

- Groundwater Level Monitoring
- Groundwater Quality Monitoring *TBA
- Land Subsidence Monitoring
- Remote Sensing/Satellite Monitoring *TBA

5.x.4 Aquifer Conditions (C.V. ONLY)

- Groundwater Occurrence and Movement
 - Depth-to-Groundwater
 - Groundwater Elevations
- Groundwater Level Trends
- Change in Groundwater Storage
- Groundwater Quality *TBA
- Land Subsidence

CWP Update 2013 Groundwater Content



CWP Update 2013

Groundwater Content

5.x.5 Groundwater Management

- *Groundwater Management Plans*
- *Groundwater Management Plan Assessment*
- *DWR/ACWA GW Management Survey*
- *Groundwater Ordinances*
- *Special Act District*
- *Court Adjudications*
- *Other Groundwater Management Planning Efforts*
- *Integrated Regional Water Management Plans*
- *Urban Water Management Plans*
- *Agricultural Water Management Plans*

*5.x.6 Case Studies in GW Management - *TBA*

5.x.7 Conjunctive Management Assessment

- *DWR/ACWA Conjunctive Management Survey*

*5.x.8 Statewide Sustainability Indicators - *TBA*

5.x.9 Statewide Groundwater Gap Analysis

5.x.10 References



CWP 2013 Groundwater Content

5.x.1. Groundwater Supply and Development

- Alluvial Aquifers
- Fractured-Rock Aquifers



Tables, Maps, Figures



Basin/Subbasin	Basin Name
5-22	San Joaquin Valley
5-22.08	Kings
5-22.09	Westside
5-22.10	Pleasant Valley
5-22.11	Kaweah
5-22.12	Tulare Lake
5-22.13	Tule
5-22.14	Kern County
5-23	Panoche Valley
5-25	Kern River Valley
5-26	Walker Basin Creek Valley
5-27	Cummings Valley
5-28	Tehachapi Valley West
5-29	Castac Lake Valley
5-71	Vallecitos Creek Valley
5-80	Brite Valley
5-82	Cuddy Canyon Valley
5-83	Cuddy Ranch Area
5-84	Cuddy Valley
5-85	Mil Potrero Area



CWP 2013 Groundwater Content

5.x.1. Groundwater Supply and Development

- Well Infrastructure and Distribution → Tables, Maps, Figures

HR Tables...Approximate Number of Well Logs by Use and County, for Tulare Lake Hydrologic Region: 1977 - 2010

County	Total Number of Well Logs by Well Use						Total Well Records
	Domestic	Irrigation	Public Supply	Industrial	Monitoring	Other	
Kings	1,540	1,550	90	20	410	550	4,150
Tulare	5,790	4,580	450	60	740	1,360	12,980
Kern	5,180	1,600	310	60	970	2,010	10,130
Fresno	15,960	5,050	740	50	1,090	4,180	27,070
Total Well Log Records	28,470	12,790	1,580	180	3,210	8,100	54,320

Why Approximate?

- 1977-2010: Represents the furthest point we could go back with our Statewide well log database and still capture well log installation by well type.
- County breakdown: Represents the smallest area that we could drill down to based on locations provided in our Statewide well log database.



Well Log Data Challenges

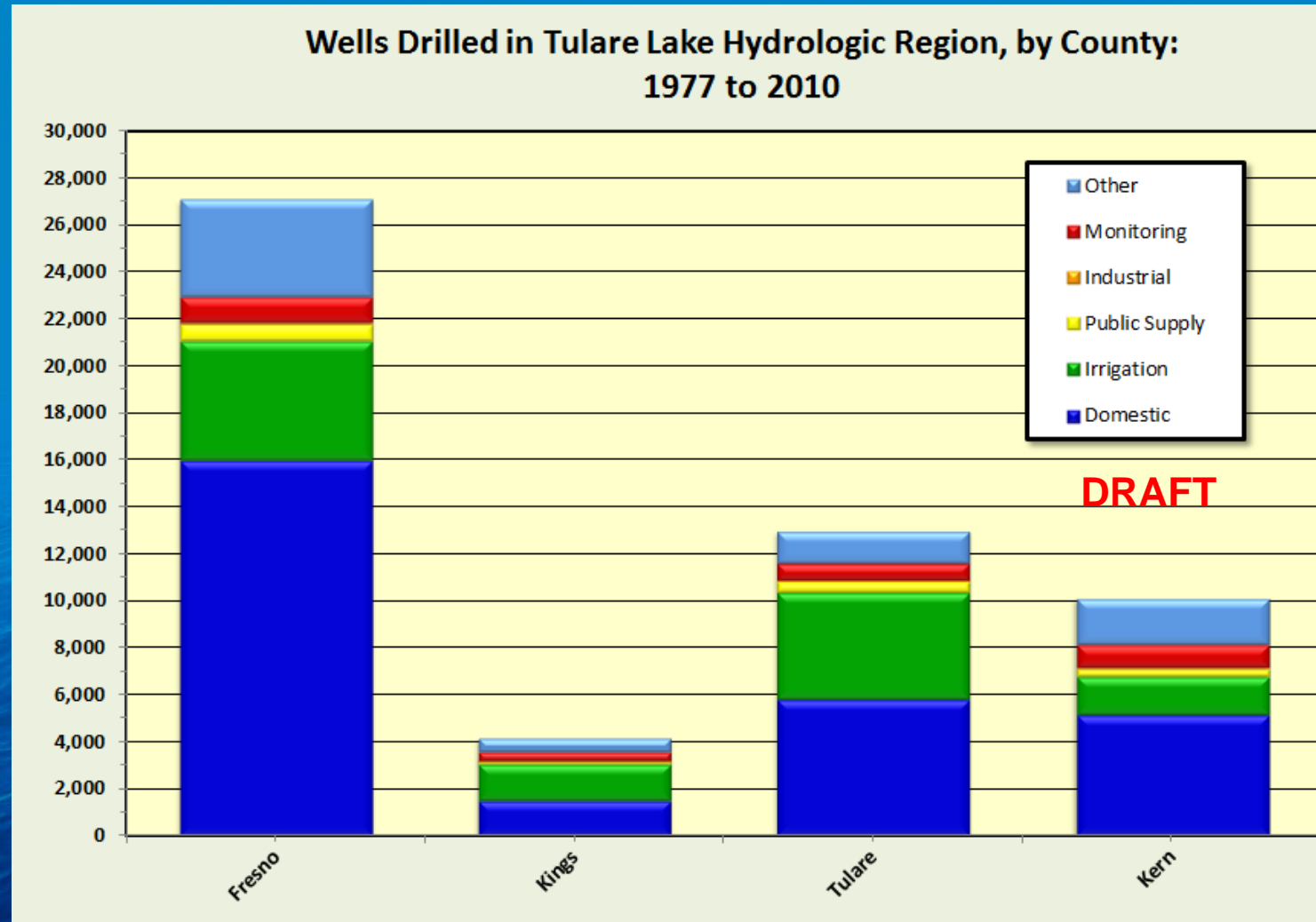
Hydrologic Regions vs County Boundaries



CWP 2013 Groundwater Content

5.x.1. Groundwater Supply and Development

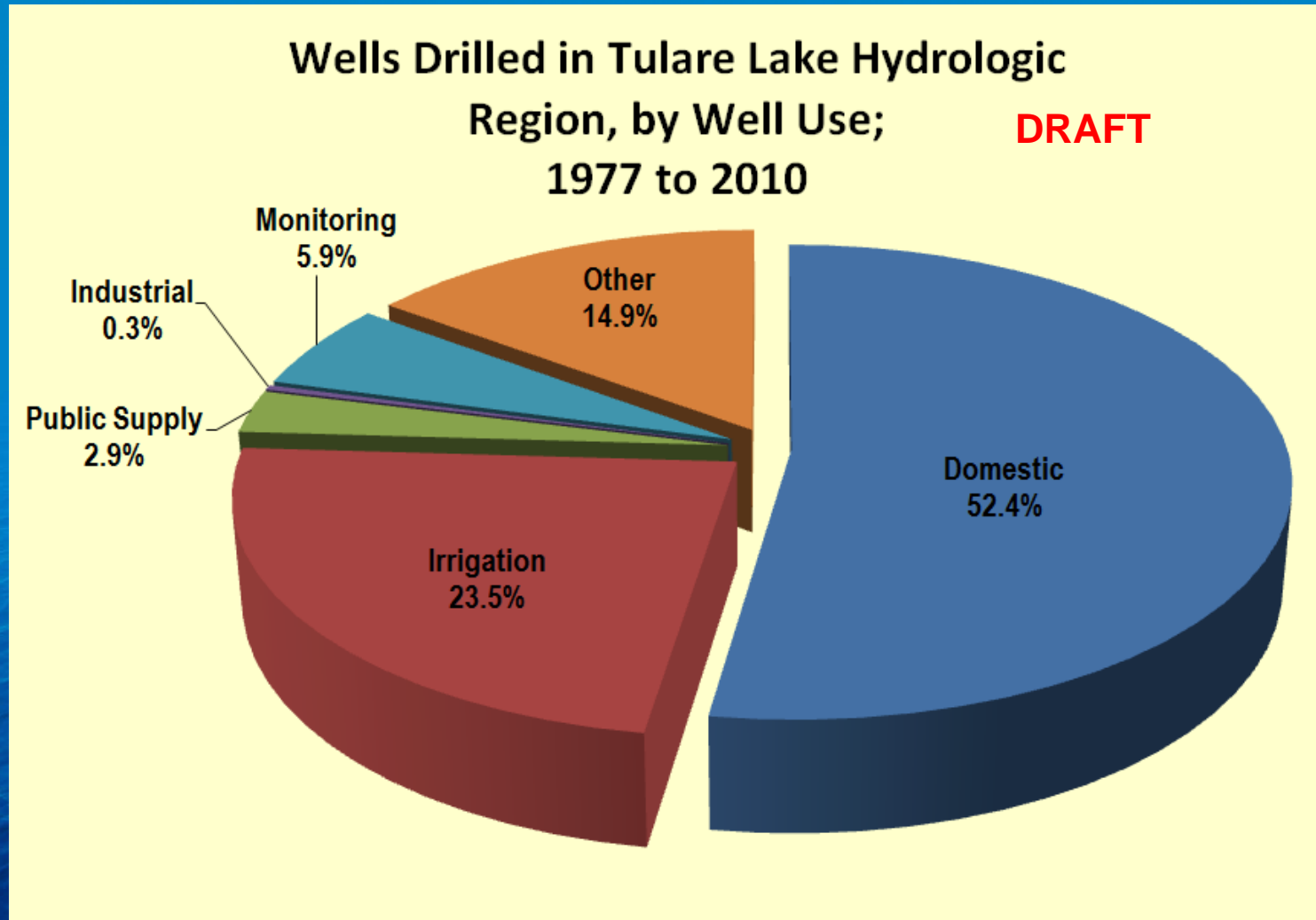
- Well Infrastructure and Distribution → Tables, Maps, Figures



CWP 2013 Groundwater Content

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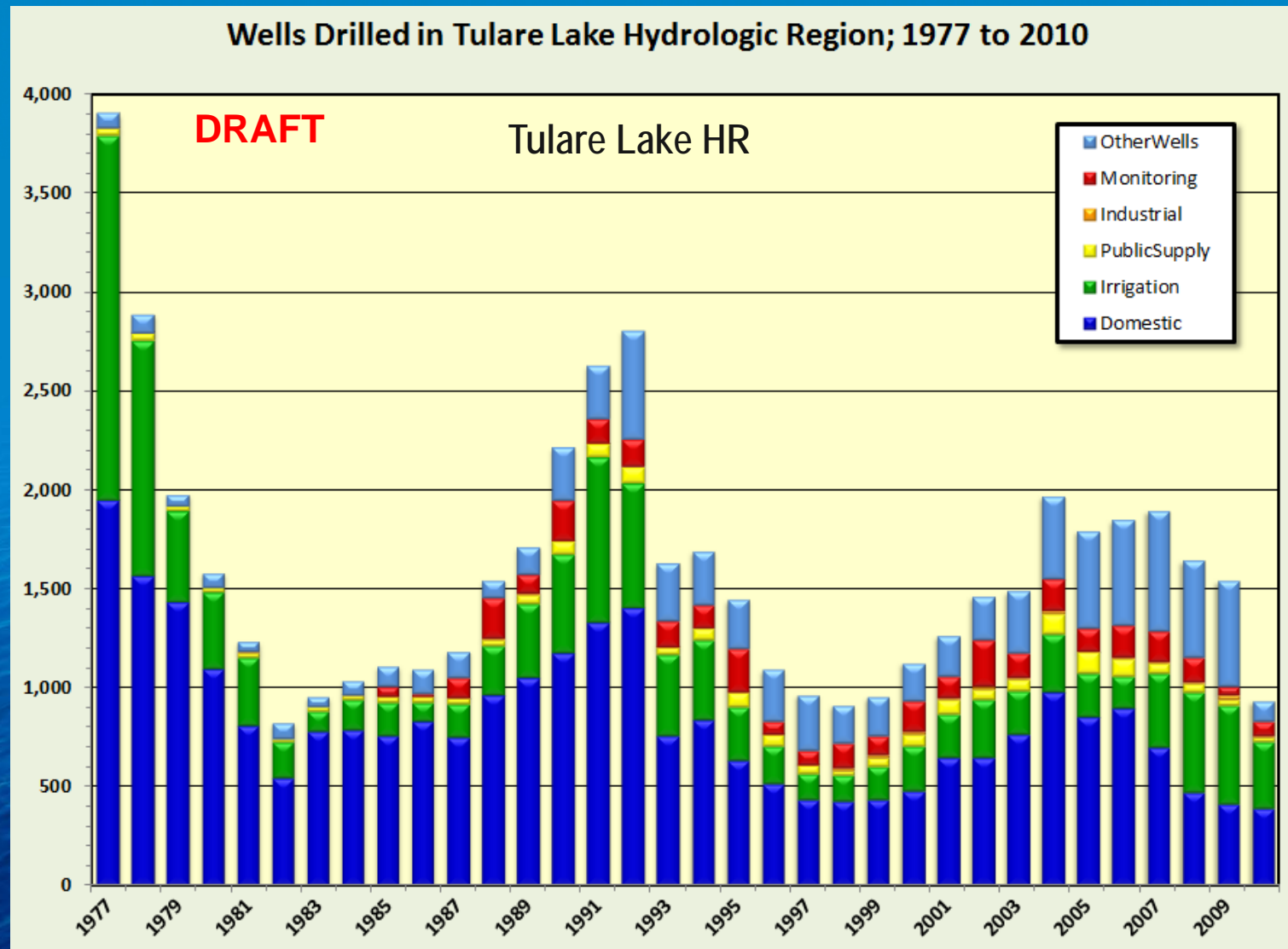
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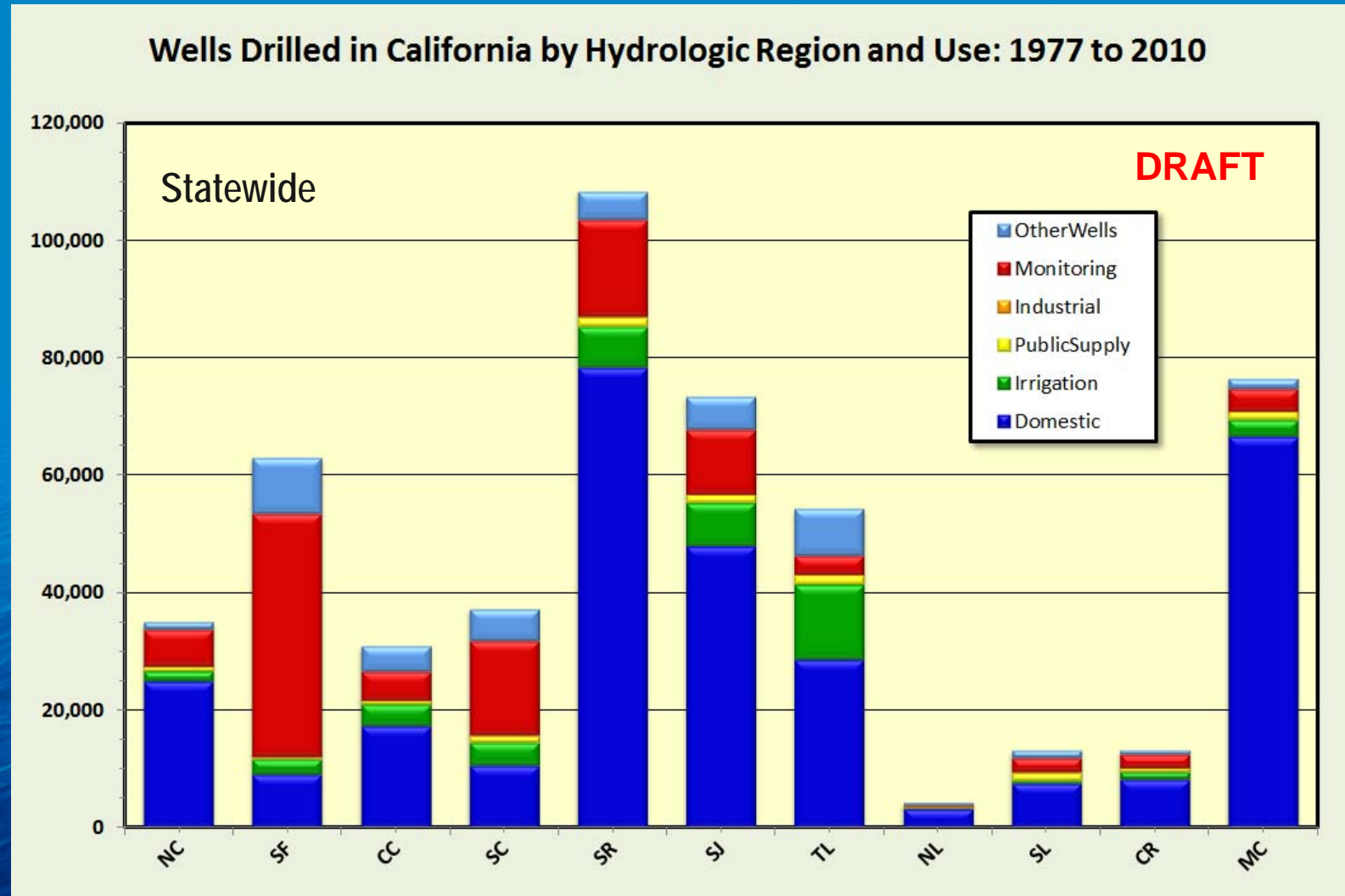
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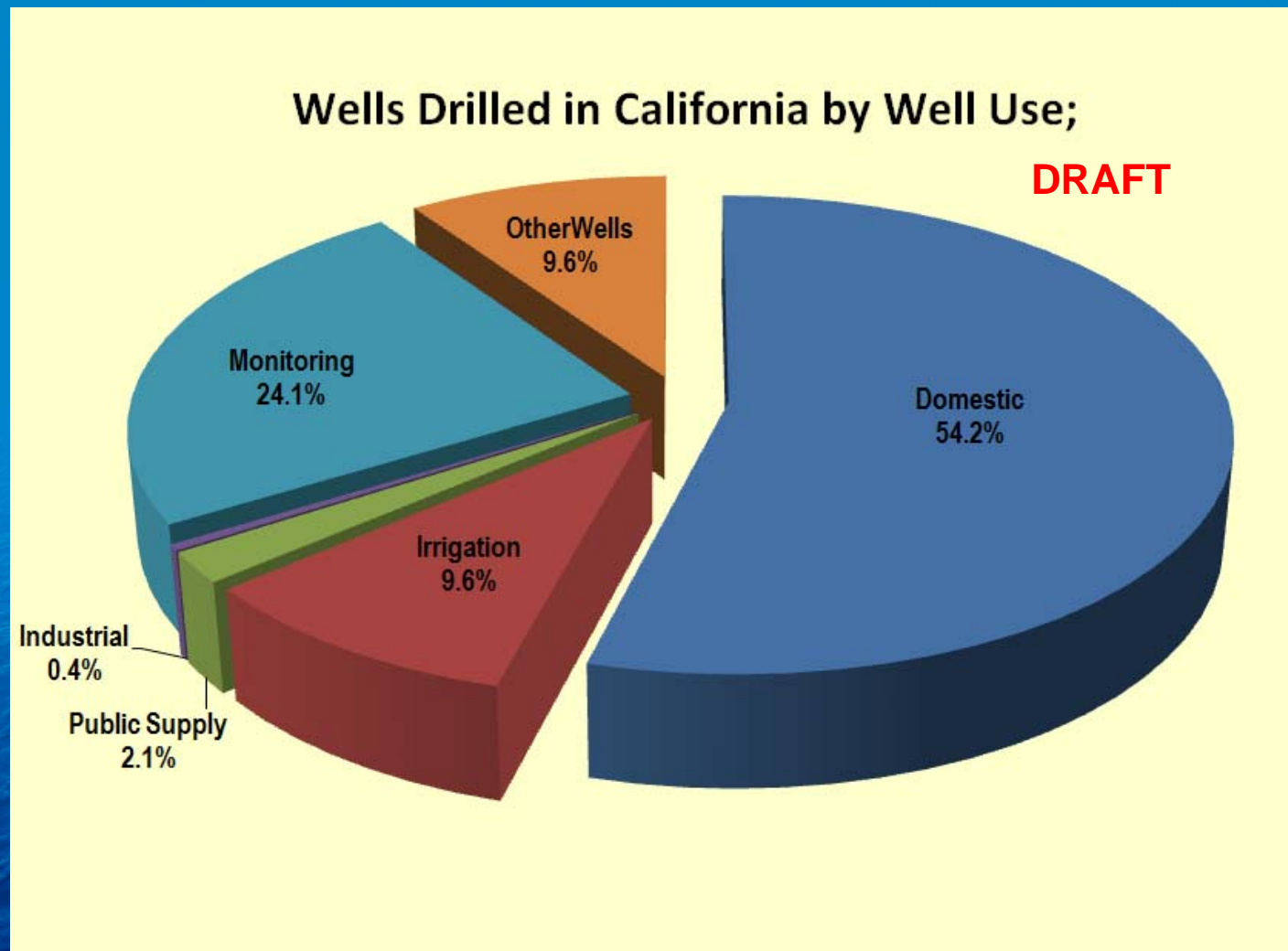
- Well Infrastructure and Distribution → Tables, Maps, Figures



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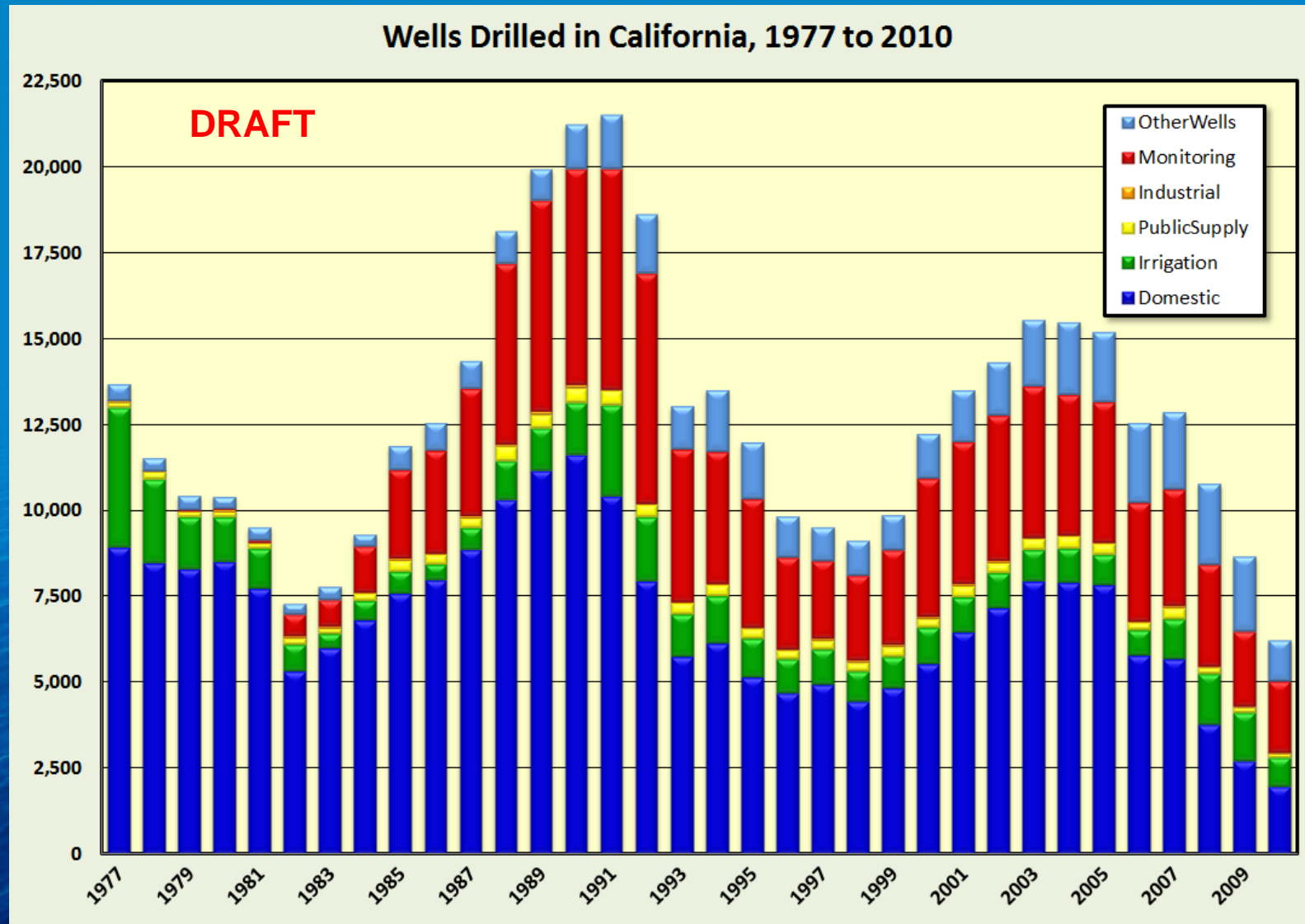
- Well Infrastructure and Distribution → Tables, Maps, Figures



CWP 2013 Groundwater Content

5.x.1. Groundwater Supply and Development

- Well Infrastructure and Distribution → **Tables, Maps, Figures**

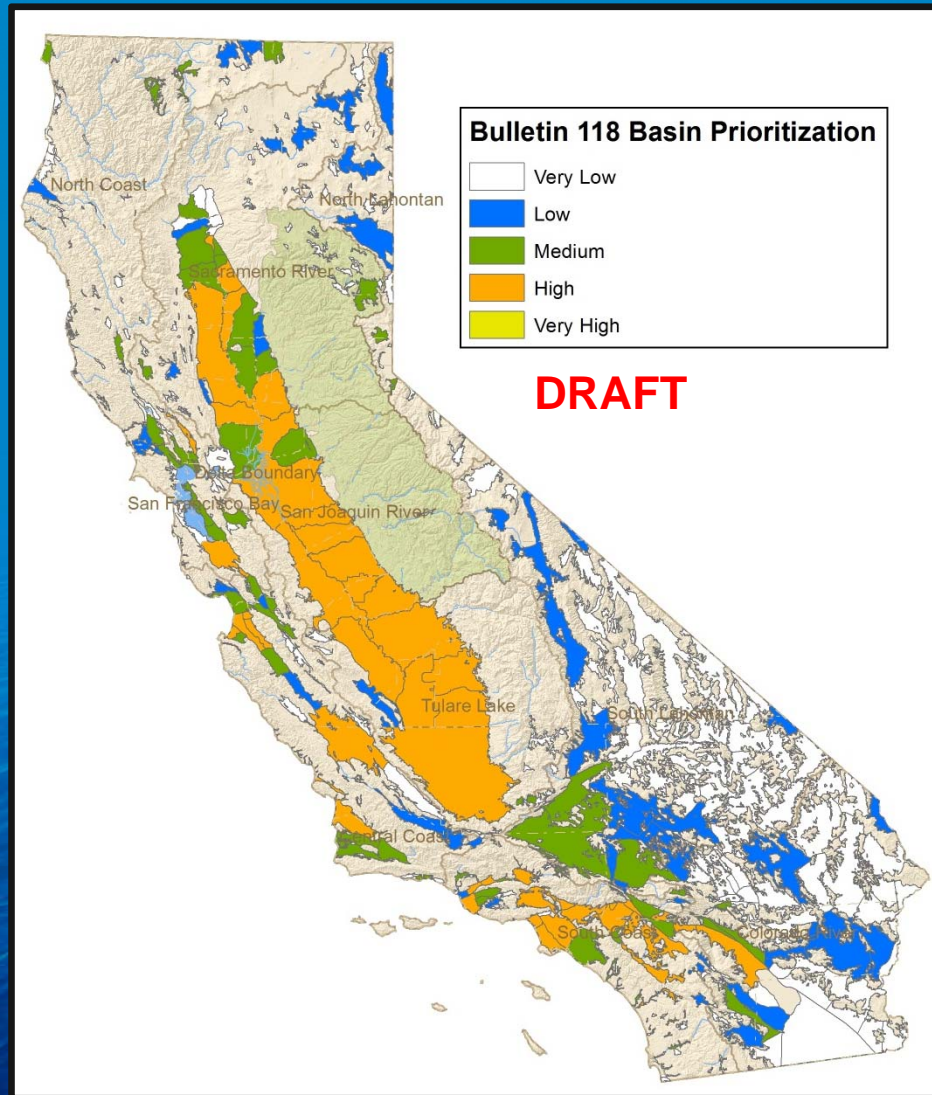


CWP 2013 Groundwater Content

5.x.1. Groundwater Supply and Development

- Priority Basins

→ Tables, Maps, Figures



CASGEM Legislation Directed DWR to Conduct a Statewide Basin Prioritization, taking into consideration the following data ...

1. Population,
2. Population Growth,
3. Public Supply Wells
4. Total Number of Wells
5. Irrigated Acreage
6. Groundwater Reliance
7. Documented Impacts
8. Other Information



CWP 2013 Groundwater Content

5.x.1. Groundwater Supply and Development

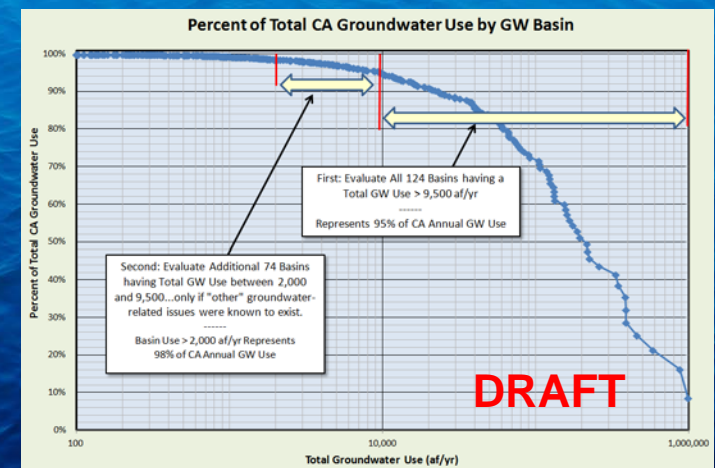
- CASGEM Basin Prioritization

How will the Basin Prioritization Information be Used?

CASGEM: To Identify and prioritize basins Statewide needing improved local groundwater level monitoring and basin assessment (pending funding).

CWP Update 2013: To help provide additional value and consistent understanding of groundwater basin significance when discussing...

- Well Infrastructure and Distribution,
- Groundwater Use,
- Groundwater Monitoring,
- Groundwater Level Trends
- Change in Groundwater Storage,
- Groundwater Management,
- Subsidence,
- Data Gaps

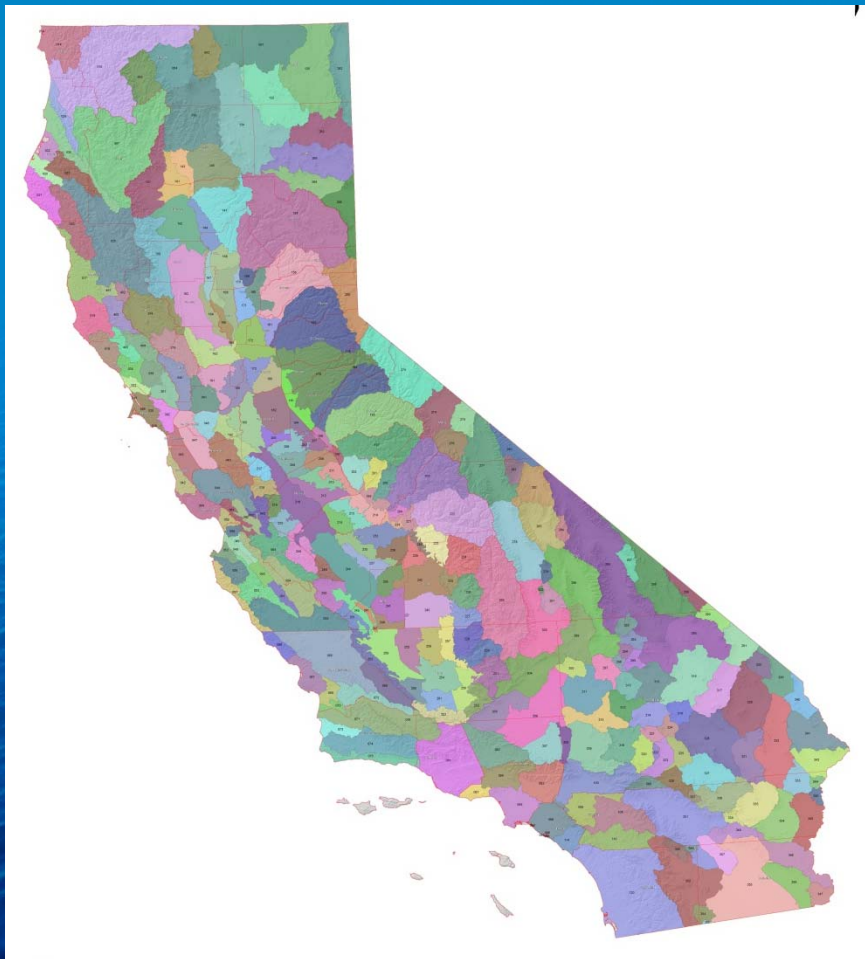


5.x.2. Groundwater Use

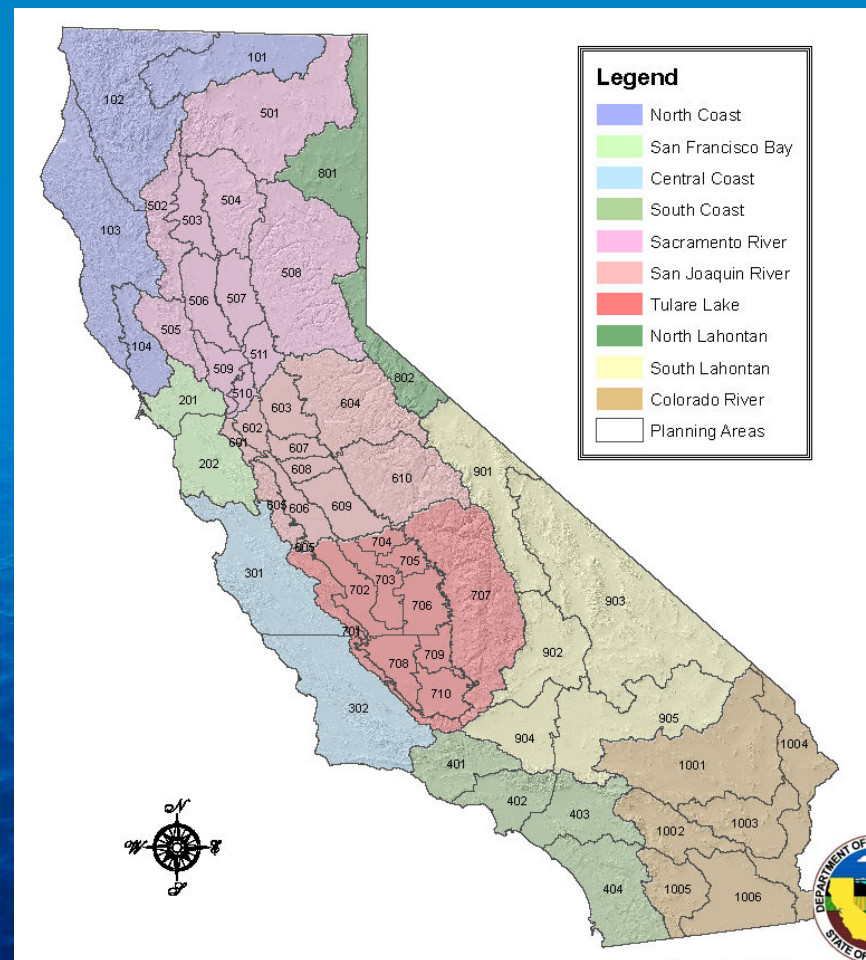
Water Use Developed by: DAU > County > PA > HR

Water Use Presented by: Area (County, PA, HR) and Use (Ag, Urban, MW)

Detailed Analysis Units (278)



Planning Areas (56) and HRs (10)



Groundwater Use: County, PA, HR... not Groundwater Basins

Groundwater Basins (515)



Counties (58)



5.x.2 Groundwater Use

- By HR, Planning Area, & County
- By Use: Ag, Urban, MW

→ Tables, Maps, Figures

Statewide Groundwater Use Reporting

2006-09 Ave.	Ag		Urban		MW		Total	
HR	TAF	%	TAF	%	TAF	%	TAF	%
NC	325	44%	58	40%	2	1%	386	34%
SF	85	77%	182	16%	0	0%	267	21%
CC	963	92%	222	73%	0	0%	1,185	88%
SC	447	60%	1,299	34%	0	0%	1,746	38%
SR	2,400	35%	428	48%	20	6%	2,848	35%
SJ	2,923	44%	402	56%	189	38%	3,514	44%
TL	6,522	58%	631	82%	30	38%	7,183	59%
NL	121	27%	38	84%	12	50%	171	33%
SL	282	85%	180	65%	0	0%	462	76%
CR	51	1%	327	56%	0	0%	378	9%
Statewide	14,121	44.4%	3,767	43.4%	253	19.8%	18,141	43%
MC	TBA	TBA	TBA	TBA	TBA	TBA	TBA	TBA

Notes: 1) 2010 data will be added when available.

2) Percentages are % of Total Water Supply Met by GW



5.x.2 Groundwater Use

- By HR, Planning Area, & County
- By Use: Ag, Urban, MW

→ Tables, Maps, Figures

Tulare Lake HR Groundwater Use Reporting: by County

2006-10 Ave.	Ag		Urban		MW		Total	
County	TAF	%	TAF	%	TAF	%	TAF	%
Fresno	2,013	51%	286	84%	1	4%	2,299	53%
Kern	1,728	52%	195	77%	25	55%	1,948	54%
Kings	1,049	62%	41	94%	0	0%	1,090	63%
Tulare	1,938	68%	134	98%	3	100%	2,076	69%
TL Ave. Total:	6,728	58%	656	88%	30	40%	7,414	60%

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Notes: 1) 2010 data will be added when available.

2) Percentages are % of Total Water Supply Met by GW



5.x.2 Groundwater Use

- By HR, Planning Area, & County
- By Use: Ag, Urban, MW

→ Tables, Maps, Figures

Tulare Lake HR Groundwater Use Reporting: by PA

2006-09 Ave.	Planning Area	Ag		Urban		MW		Total	
PA		TAF	%	TAF	%	TAF	%	TAF	%
701	Western Uplands	0	100%	2	100%	0	0%	2	100%
702	San Luis West Side	690	46%	8	41%	0	0%	701	46%
703	Lower Kings-Tulare	1,640	74%	46	100%	1	4%	1,689	73%
704	Fresno - Academy	80	16%	215	79%	0	0%	294	38%
705	Alta - Orange Cove	540	54%	62	97%	0	0%	599	57%
706	Kaweah Delta	1,830	69%	115	97%	3	100%	1,948	70%
707	Uplands	40	97%	15	79%	0	0%	50	91%
708	Semitropic - Buena Vista	680	59%	22	82%	25	55%	727	59%
709	Kern Valley Floor	340	40%	32	96%	0	0%	375	43%
710	Kern Delta	690	51%	114	69%	0	0%	800	53%
TL Ave. Total:		6,520	58%	631	82%	30	38%	7,183	59%

Notes: 1) 2010 data will be added when available.

2) Percentages are % of Total Water Supply Met by GW

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Do we Need to Report at the PA Level ?



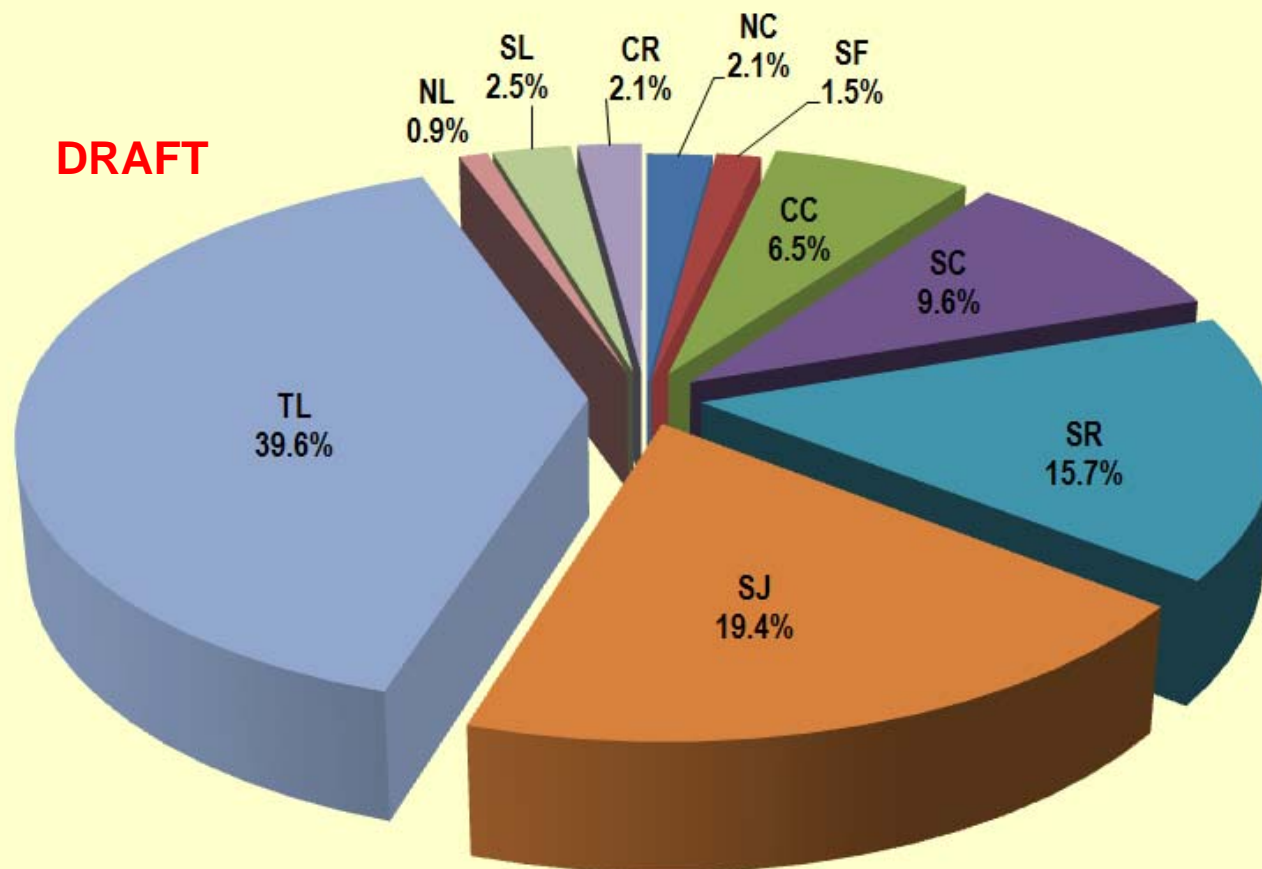
5.x.2 Groundwater Use

- By HR, Planning Area, & County
- By Use: Ag, Urban, MW

→ Tables, Maps, Figures

Statewide Groundwater Use Reporting: by Hydrologic Region

2006 - 2009 Average Annual Percent California Groundwater Use
by Hydrologic Region

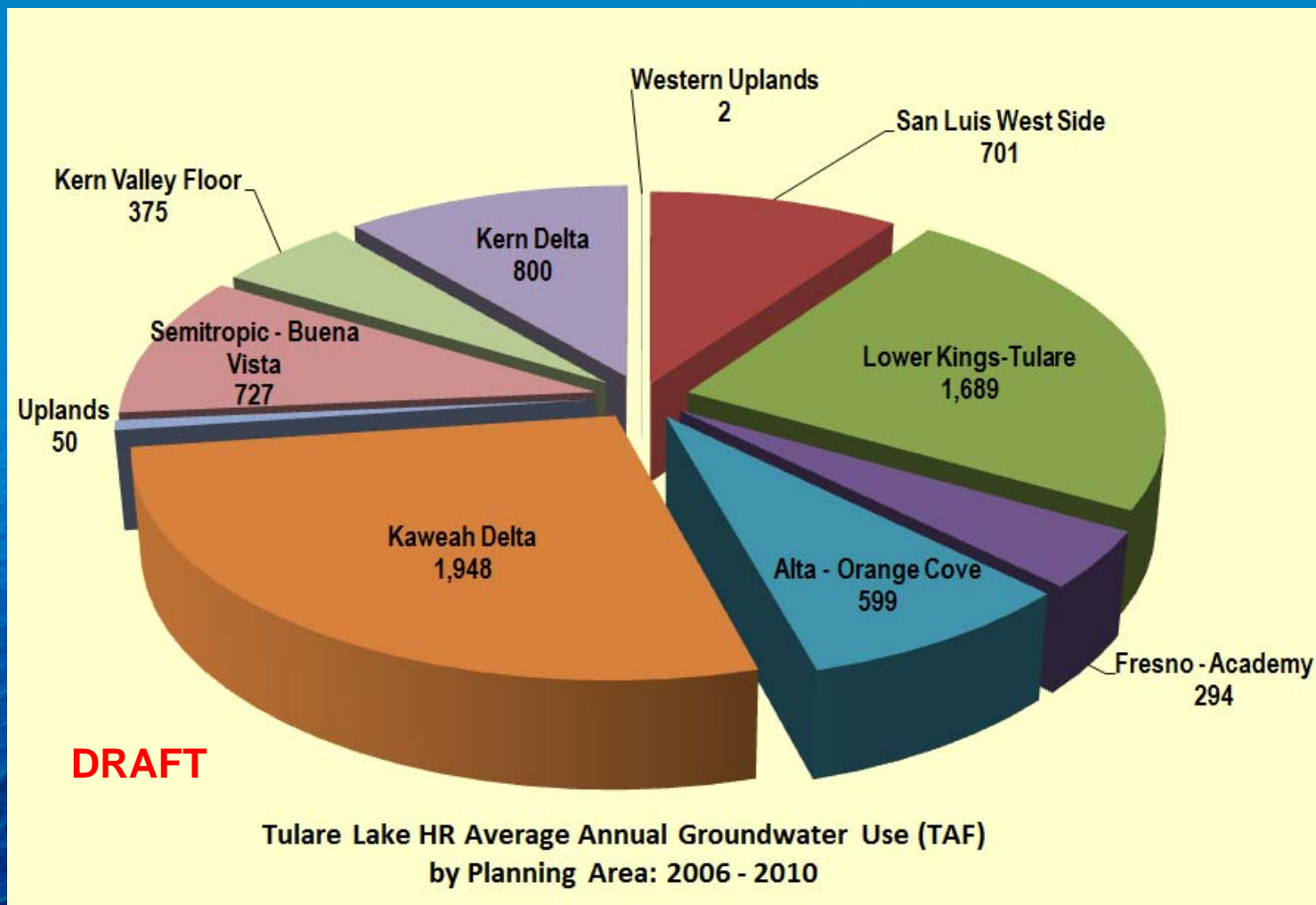


5.x.2 Groundwater Use

- By HR, Planning Area, & County
- By Use: Ag, Urban, MW

→ **Tables, Maps, Figures**

Hydrologic Region Groundwater Use Reporting: by Planning Area

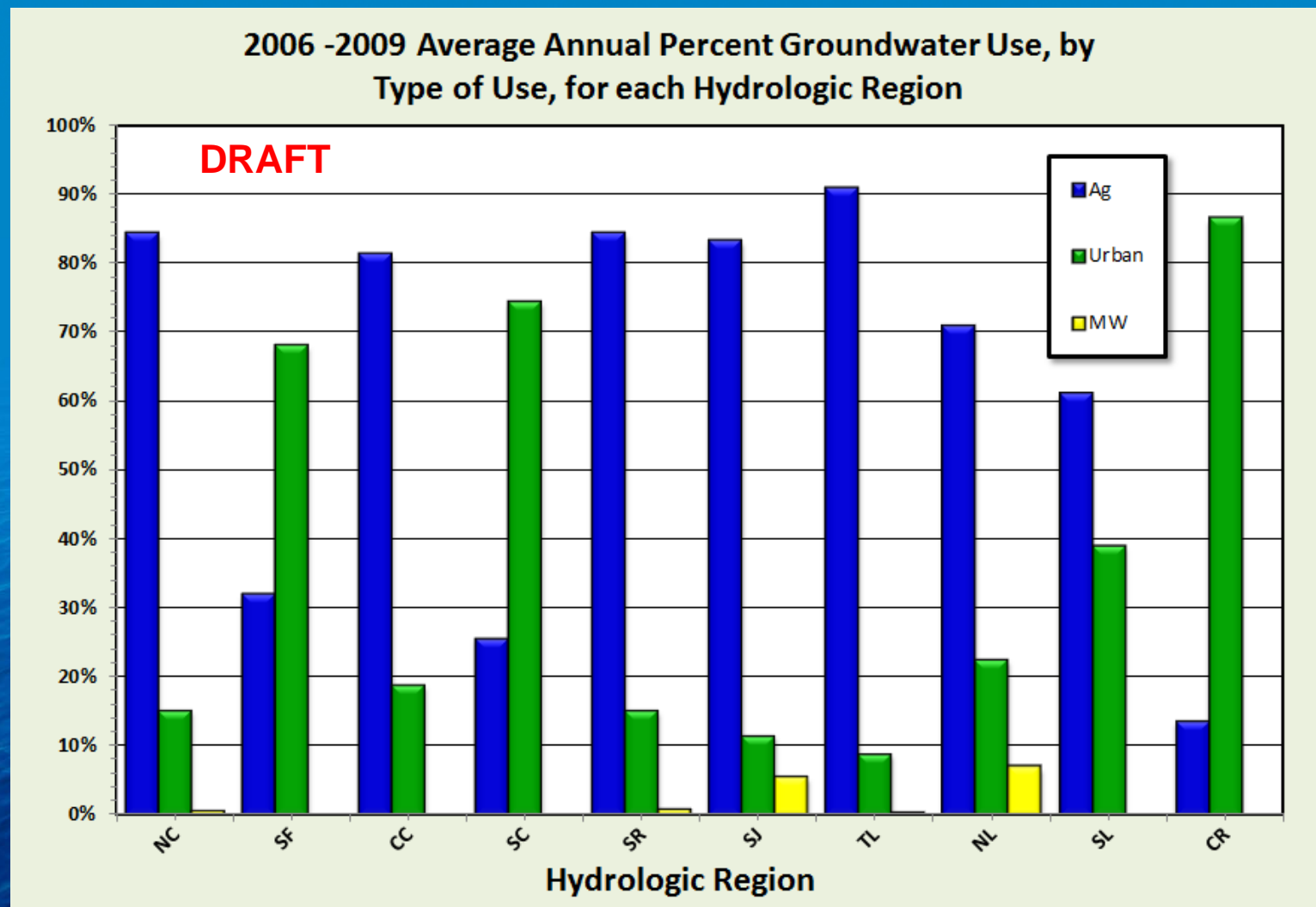


5.x.2 Groundwater Use

- By HR, Planning Area, & County
- By Use: Ag, Urban, MW

→ Tables, Maps, Figures

Statewide Groundwater Use Reporting

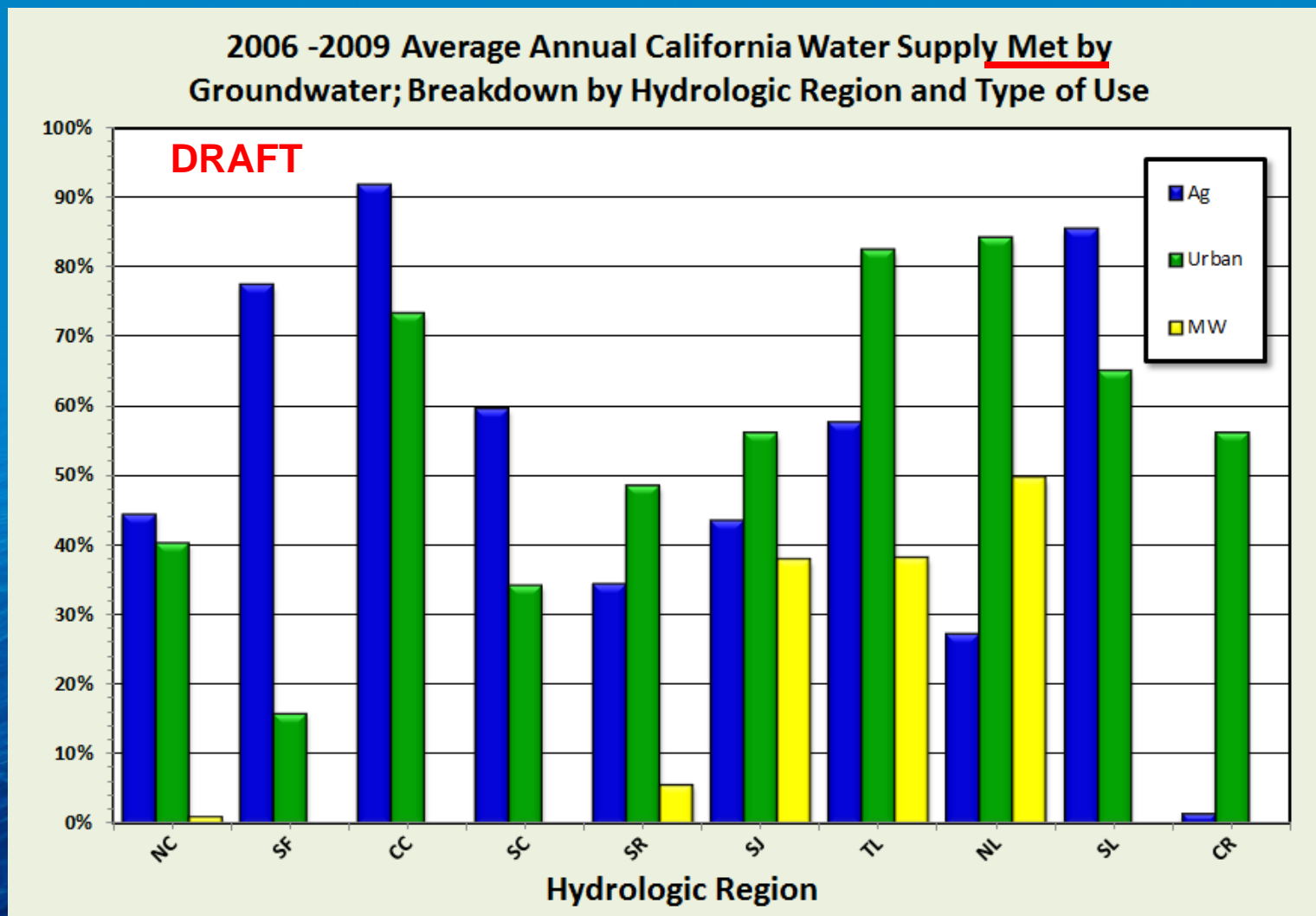


5.x.2 Groundwater Use

- By HR, Planning Area, & County
- By Use: Ag, Urban, MW

→ Tables, Maps, Figures

Statewide Groundwater Use Reporting

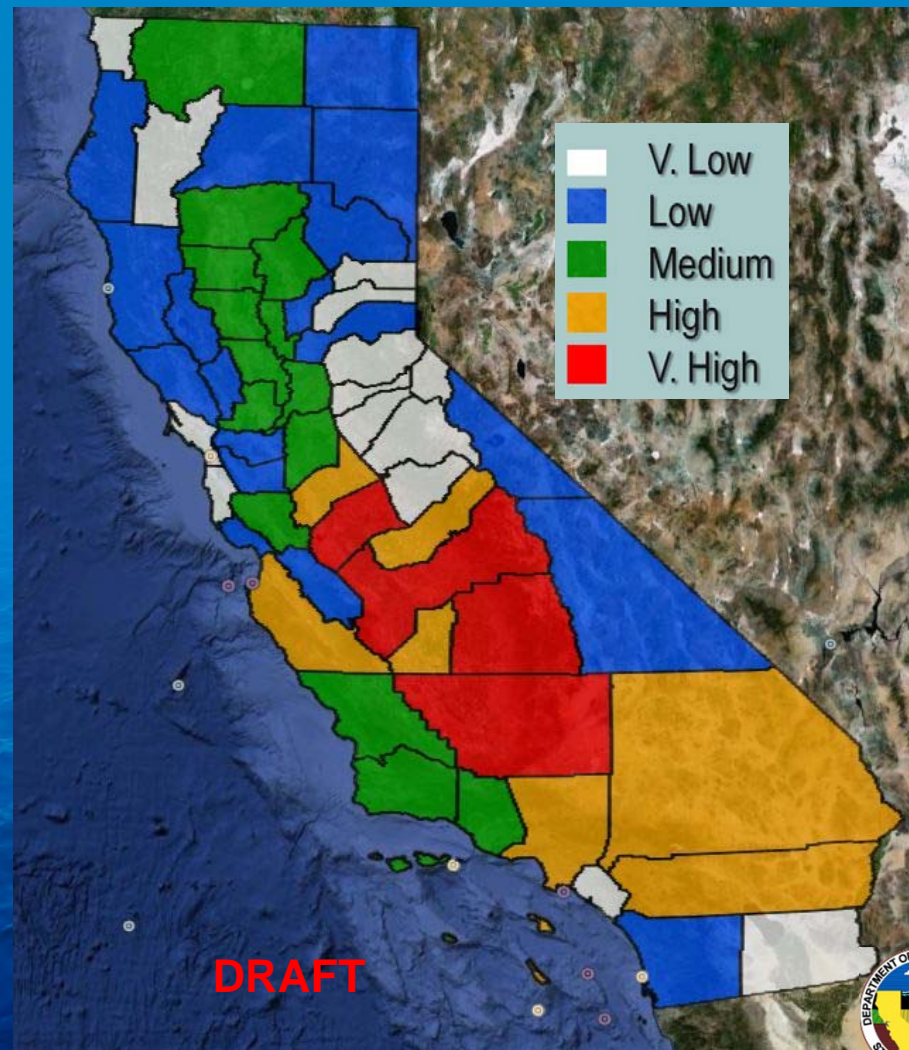
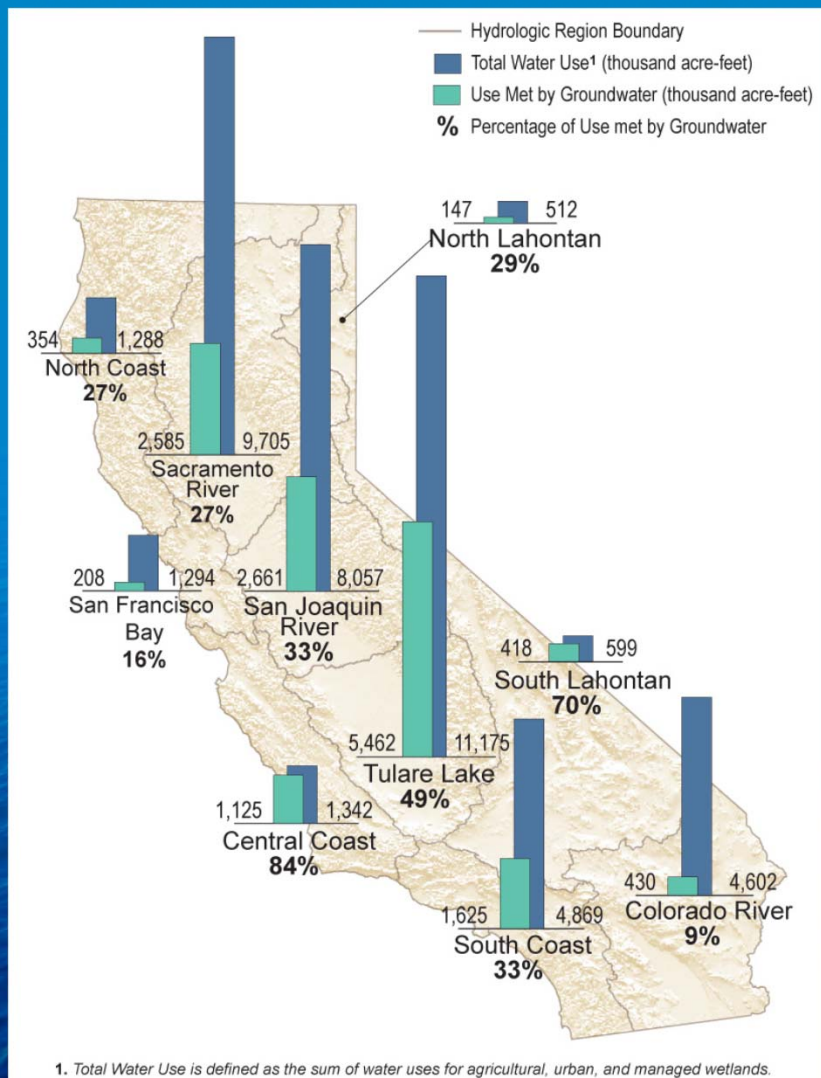


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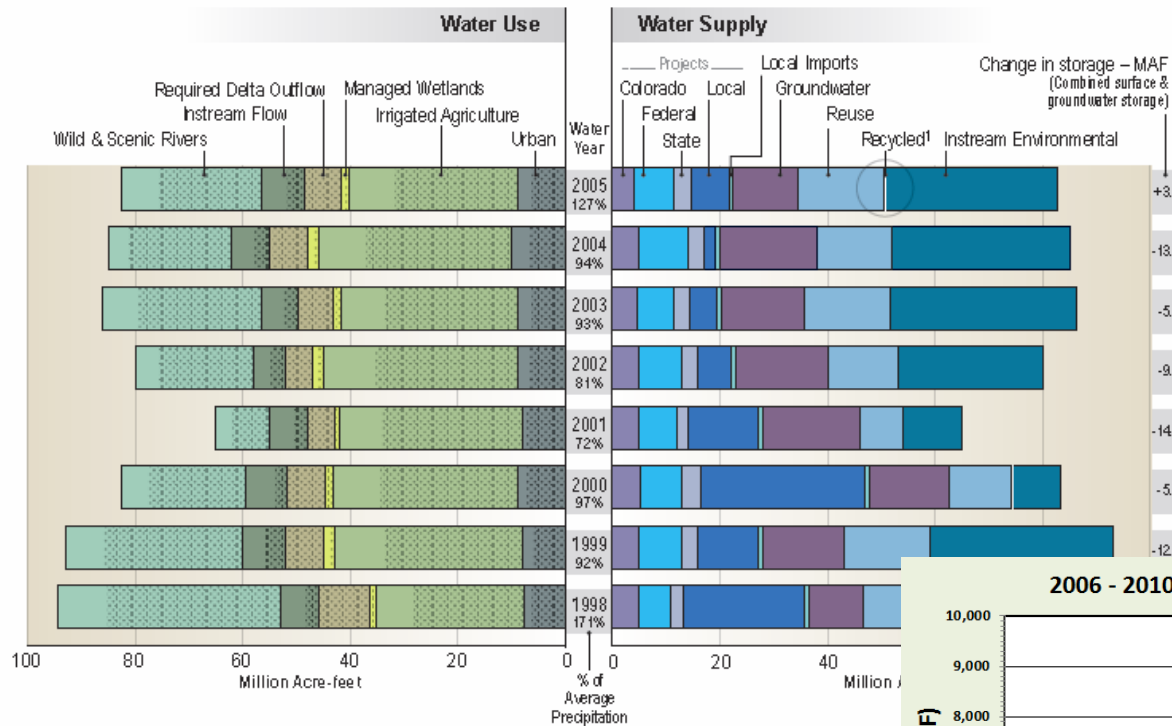
→ Tables, Maps, Figures

Statewide Groundwater Use Reporting



5.x.2 Groundwater Use

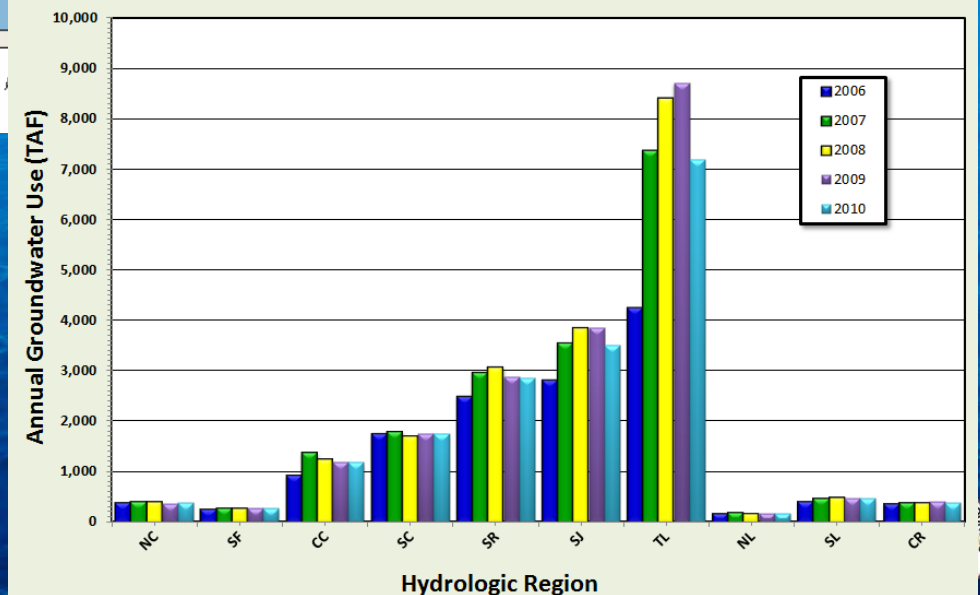
Figure 4-7 California water balance by year, 1998-2005



Other Graphics Needed?

Yearly Charts?

2006 - 2010 Annual Groundwater Use in California by Hydrologic Region



5.x.3. Groundwater Monitoring Efforts

- Groundwater Level Monitoring

→ Tables, Maps, Figures

**Tables...Number of Tulare Lake
HR Monitoring Wells by Agency
and CASGEM Monitoring Entity,
And by Well Use**

Well Use	Number of Wells
Irrigation	1,187
Domestic	2
Observation	262
Public Supply	94
Other	1,797
DRAFT Total:	3,342

State and Federal Agencies	Number of Wells
DWR	268
USGS	4
USBR	104
Total State and Federal Wells:	376
DWR Cooperators	Number of Wells
Alta Irrigation District	114
Buena Vista Water Storage District	19
California Water Service Company	12
Cawelo Water District	46
Exeter Irrigation District	51
Tule River Association	30
Tule River, Lower, Irrigation District	129
Total DWR Cooperator Wells:	61
CASGEM Monitoring Entities	Number of Wells
Arvin-Edison Water Storage District	197
Consolidated Irrigation District	8
Kern County Water Agency Improvement District No. 4	4
Kern River Fan Group	34
Kern Water Bank Authority	15
Kern-Tulare Water District	5
Kings River Conservation District	101
Semitropic Water Storage District	46
Shafter-Wasco Irrigation District	44
Tulare Irrigation District	138
Westlands Water District	1043
Total CASGEM Monitoring Entities:	1,894
Grand Total:	3,142

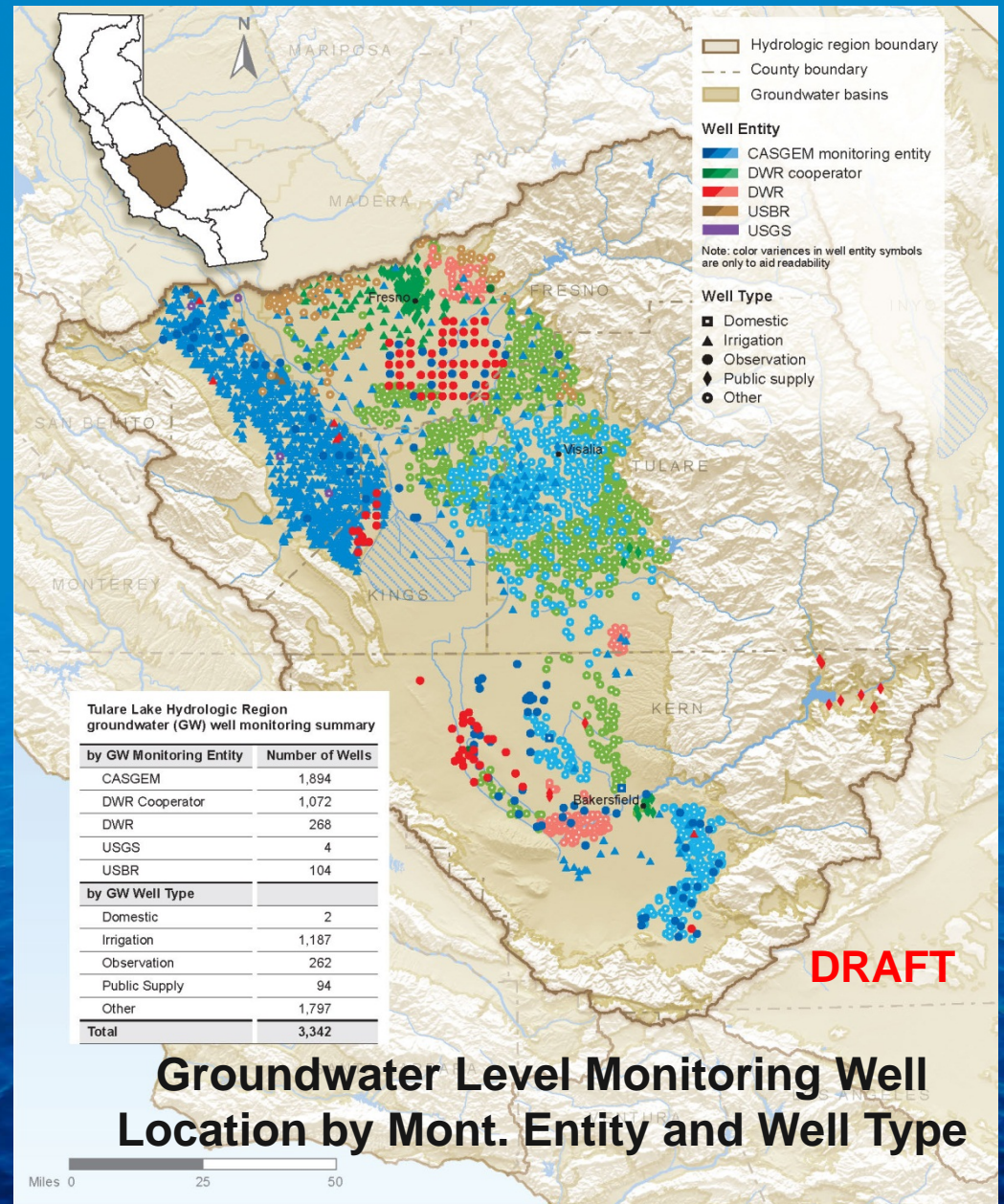
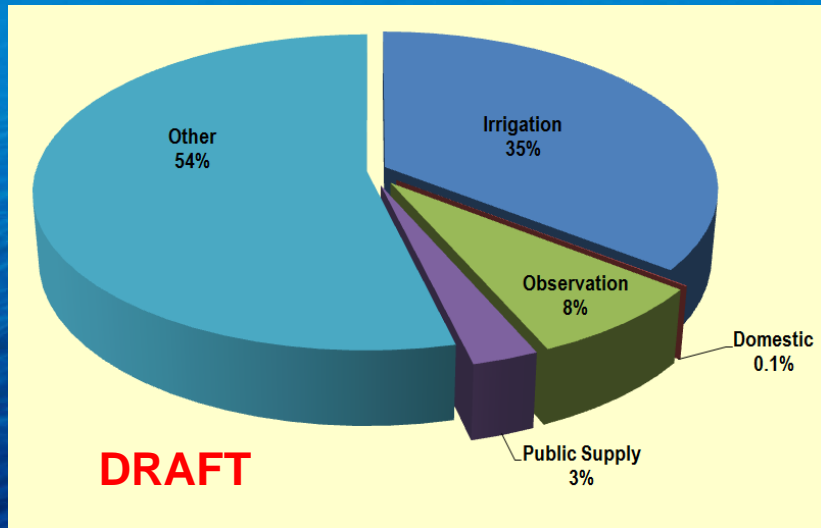
Note: Some of the TL GW Level Monitoring Cooperators and CASGEM MEs were removed to reduce PP table size.

5.x.3 Groundwater Monitoring Efforts

- Groundwater Level Monitoring

Hydrologic Region Maps, Figures

Groundwater Level Monitoring Wells by Type

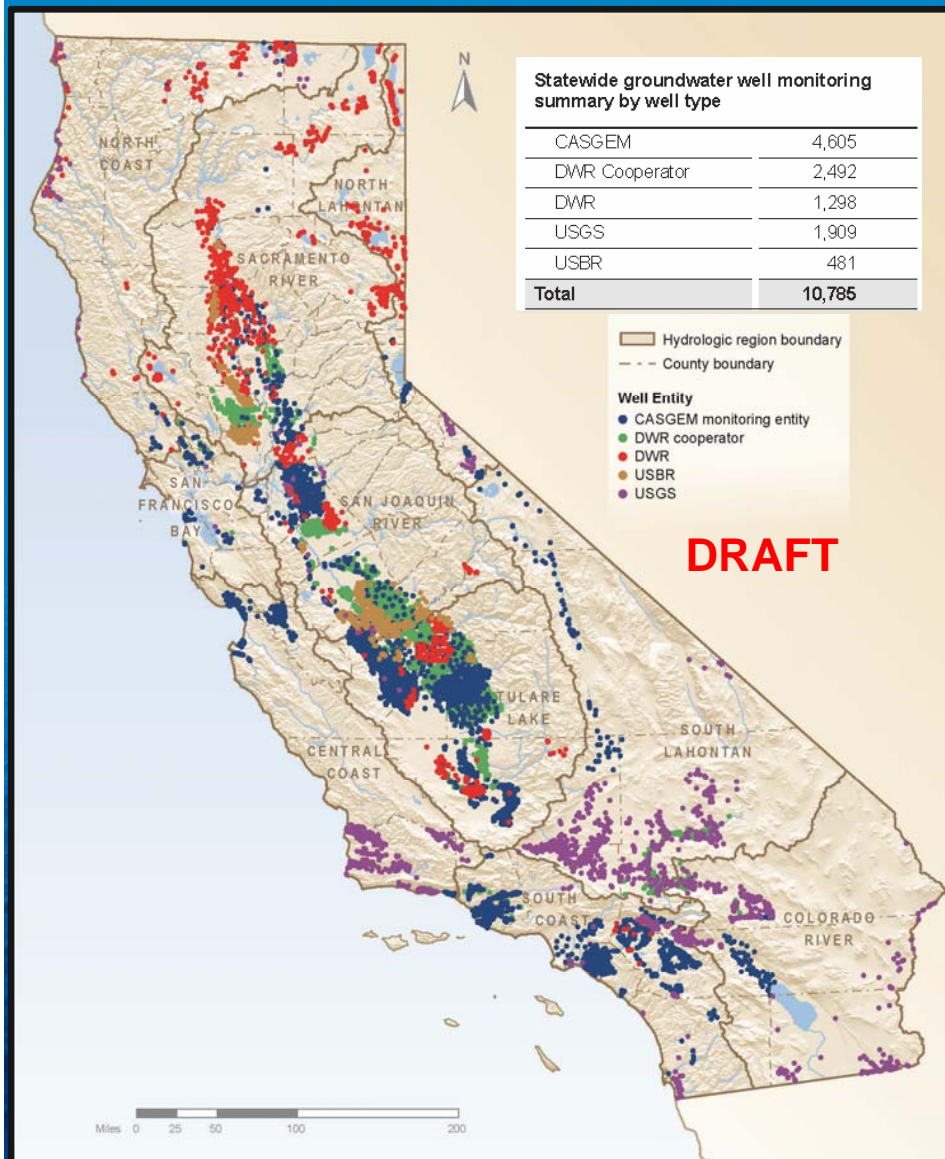


5.x.3. Groundwater Monitoring Efforts

- Groundwater Level Monitoring



Statewide Maps,

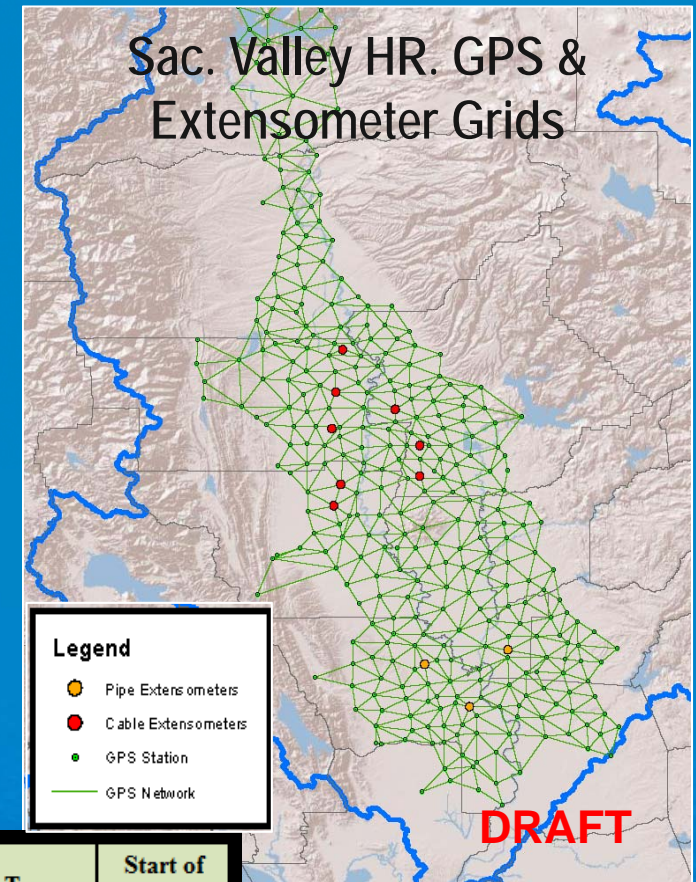


5.x.3. Groundwater Monitoring Efforts

- Land Subsidence Monitoring

➡ **Tables, Maps, Figures**
(Central Valley Only)

Sac. Valley HR Table



State Well No.	Latitude	Longitude	Depth (ft)	County	Groundwater Basin	Type	Start of Record
18N01E35L001M	39.36744	-121.82787	1,006	Butte	5-21.59 SV, East Butte	Cable	7/8/2005
19N01E35B002M	39.46344	-121.82776	1,026	Butte	5-21.59 SV, East Butte	Cable	7/7/2005
20N01E18L001M	39.57706	-121.9082	1,060	Butte	5-21.58 SV, West Butte	Cable	3/3/2005
16N02W05B001M	39.27527	-122.10568	986	Colusa	5-21.52 SV, Colusa	Cable	2/3/2005
17N02W09H002M	39.34169	-122.08377	940	Colusa	5-21.52 SV, Colusa	Cable	8/10/2005
19N02W08Q001M	39.5157	-122.11224	1,000	Glenn	5-21.52 SV, Colusa	Cable	12/1/2005
21N02W33M001M	39.62991	-122.10067	1,020	Glenn	5-21.52 SV, Colusa	Cable	3/2/2005
22N02W15C002M	39.76341	-122.07714	880	Glenn	5-21.51 SV, Corning	Cable	3/1/2005
11N04E04N005M	38.823863	-121.54307	800	Sutter	5-21.64 SV, North American	Pipe	4/13/1994
09N03E08C004M	38.64643	-121.66738	716	Yolo	5-21.67 SV, Yolo	Pipe	1/24/1992
11N01E24Q008M	38.779855	-121.81242	1,003	Yolo	5-21.52 SV, Colusa	Pipe	6/15/1988

5.x.4. Aquifer Conditions (C.V. ONLY)

- Groundwater Occurrence and Movement
 - Depth-to-Groundwater
 - Groundwater Elevations

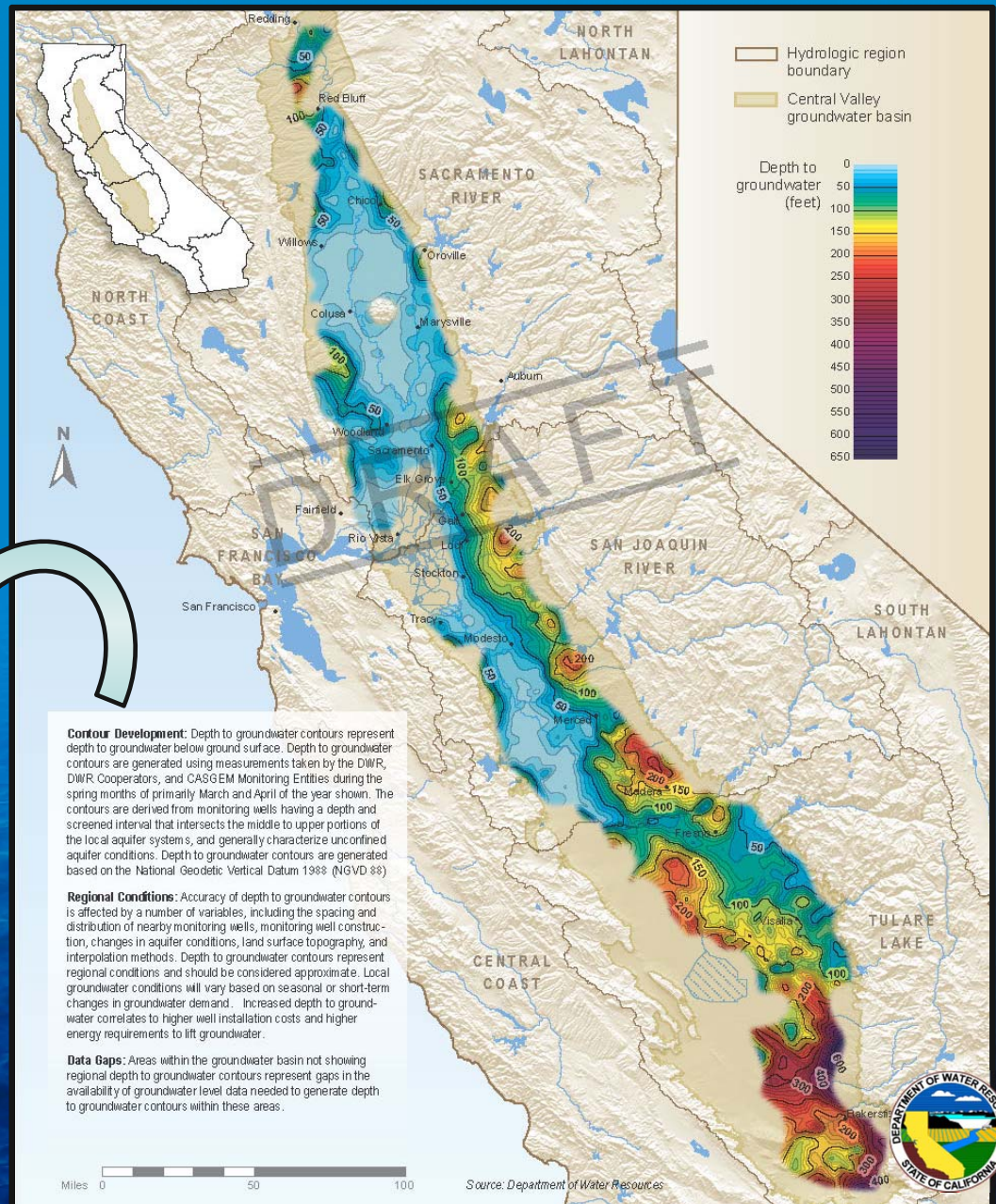
➔ Maps...

Statewide Level Spring 2010 Depth-to-Groundwater Contours

Contour Development: Depth to groundwater contours represent depth to groundwater below ground surface. Depth to groundwater contours are generated using measurements taken by the DWR, DWR Cooperators, and CASGEM Monitoring Entities during the spring months of primarily March and April of the year shown. The contours are derived from monitoring wells having a depth and screened interval that intersects the middle to upper portions of the local aquifer systems, and generally characterize unconfined aquifer conditions. Depth to groundwater contours are generated based on the National Geodetic Vertical Datum 1988 (NGVD 88)

Regional Conditions: Accuracy of depth to groundwater contours is affected by a number of variables, including the spacing and distribution of nearby monitoring wells, monitoring well construction, changes in aquifer conditions, land surface topography, and interpolation methods. Depth to groundwater contours represent regional conditions and should be considered approximate. Local groundwater conditions will vary based on seasonal or short-term changes in groundwater demand. Increased depth to groundwater correlates to higher well installation costs and higher energy requirements to lift groundwater.

Data Gaps: Areas within the groundwater basin not showing regional depth to groundwater contours represent gaps in the availability of groundwater level data needed to generate depth to groundwater contours within these areas.

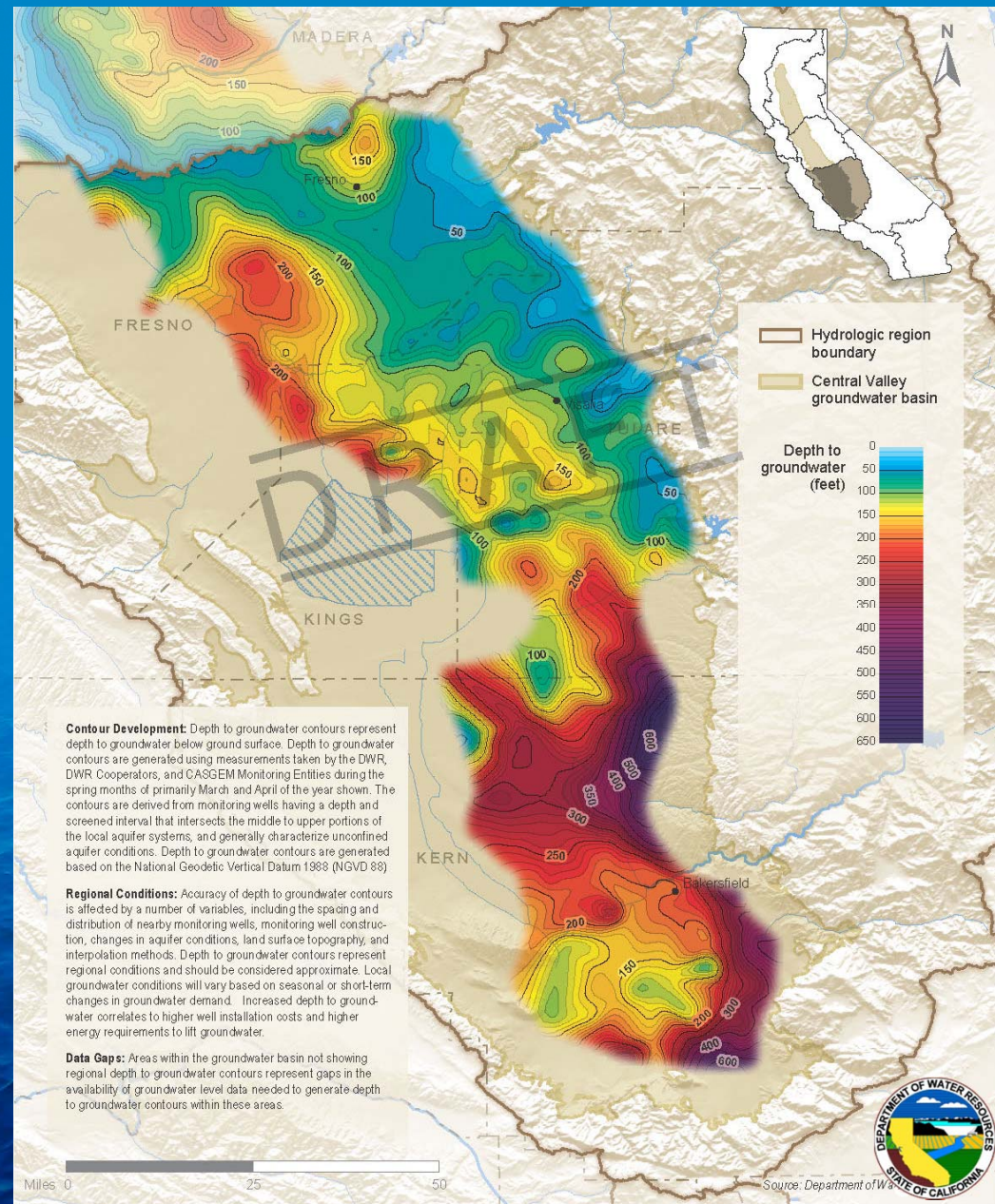


5.x.4. Aquifer Conditions (C.V. ONLY)

- Groundwater Occurrence and Movement
 - Depth-to-Groundwater
 - Groundwater Elevations

➔ Maps...

Hydrologic Region Level Spring 2010 *Depth-to-Groundwater Contours*

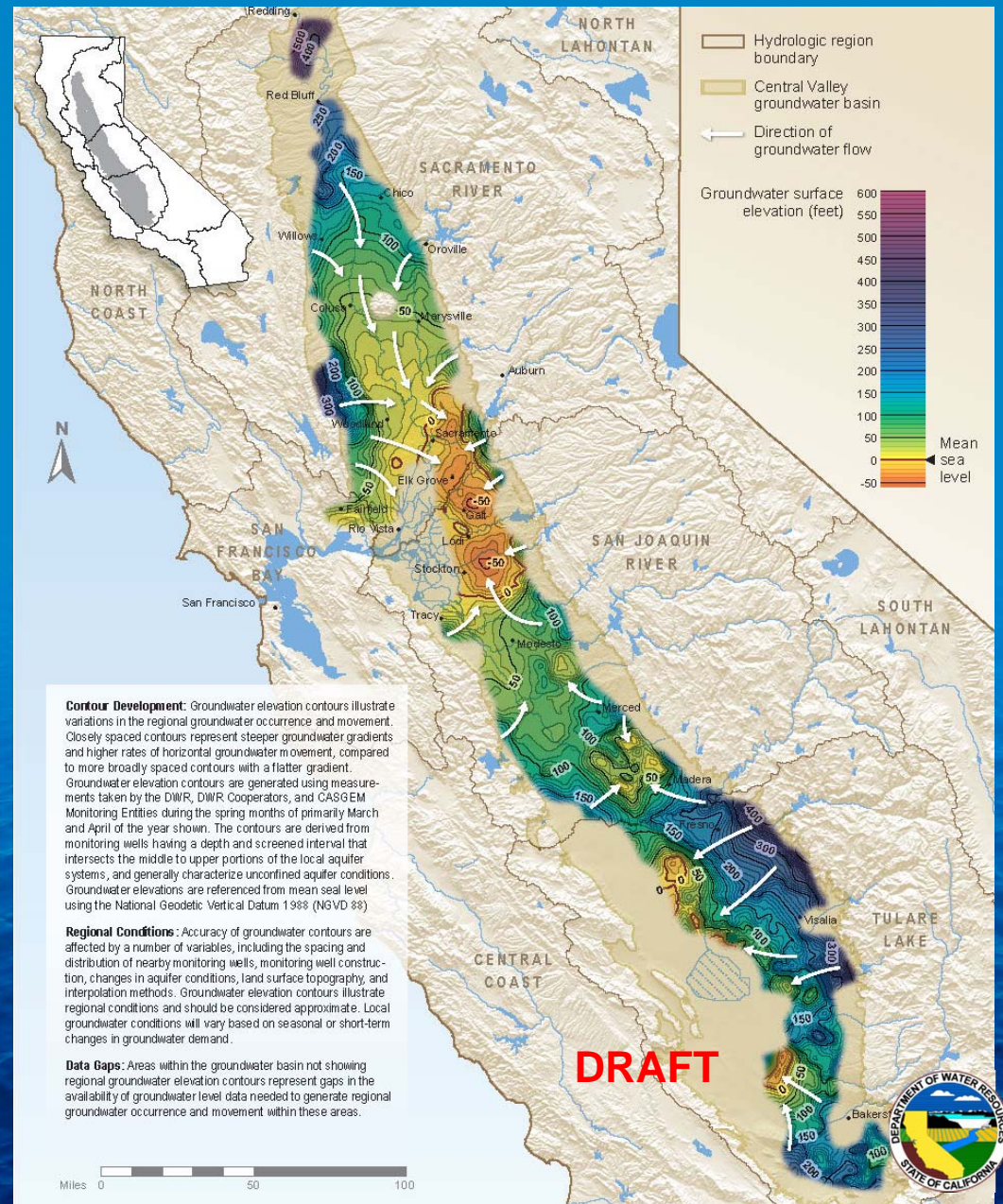


5.x.4. Aquifer Conditions (C.V. ONLY)

- Groundwater Occurrence and Movement
 - Depth-to-Groundwater
 - Groundwater Elevations

➔ Maps...

Statewide Level Spring 2010 Groundwater Elevation Contours

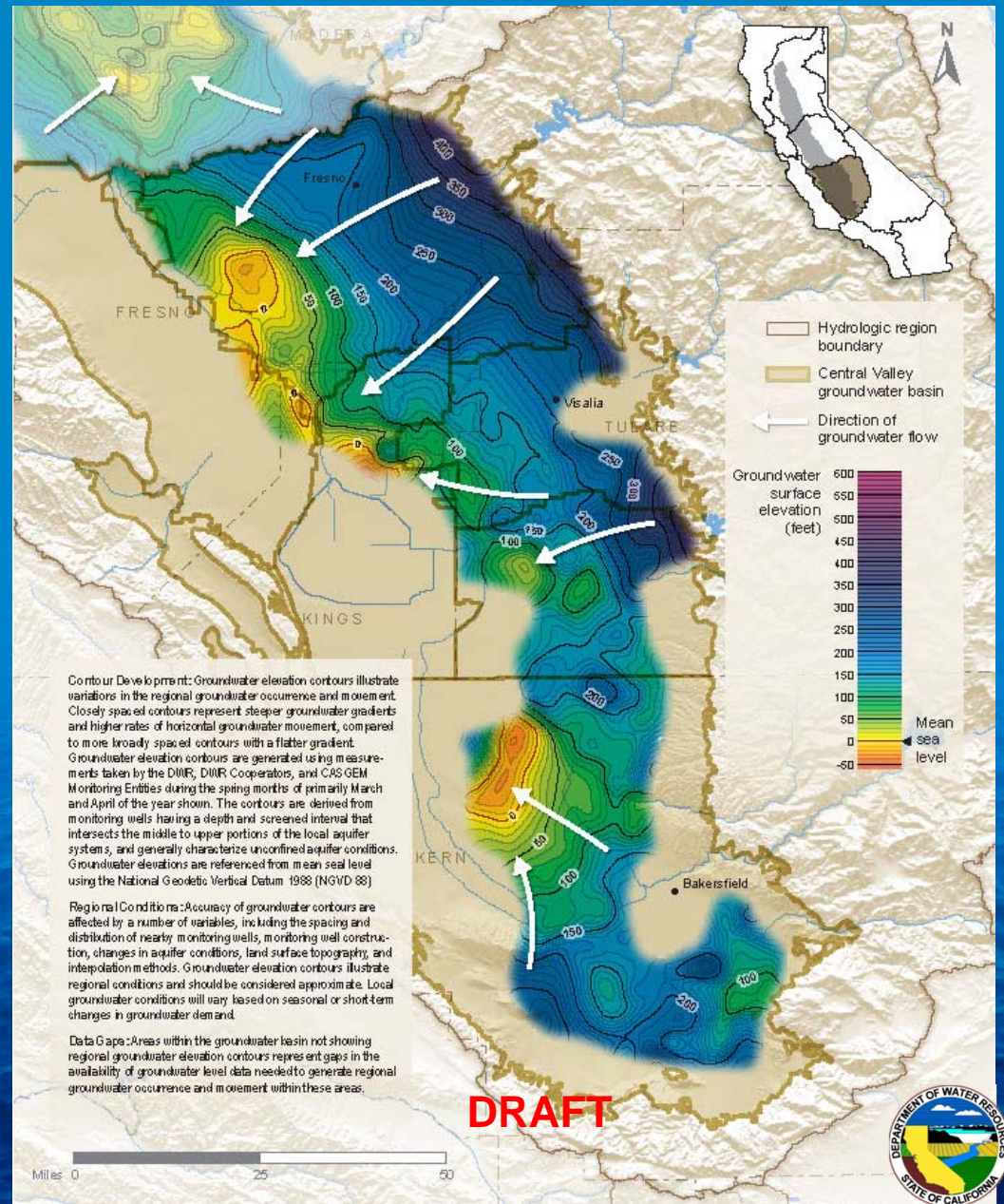


5.x.4. Aquifer Conditions (C.V. ONLY)

- Groundwater Occurrence and Movement
 - Depth-to-Groundwater
 - Groundwater Elevations

➔ Maps...

Hydrologic Region Level Spring 2010 Groundwater Elevation Contours

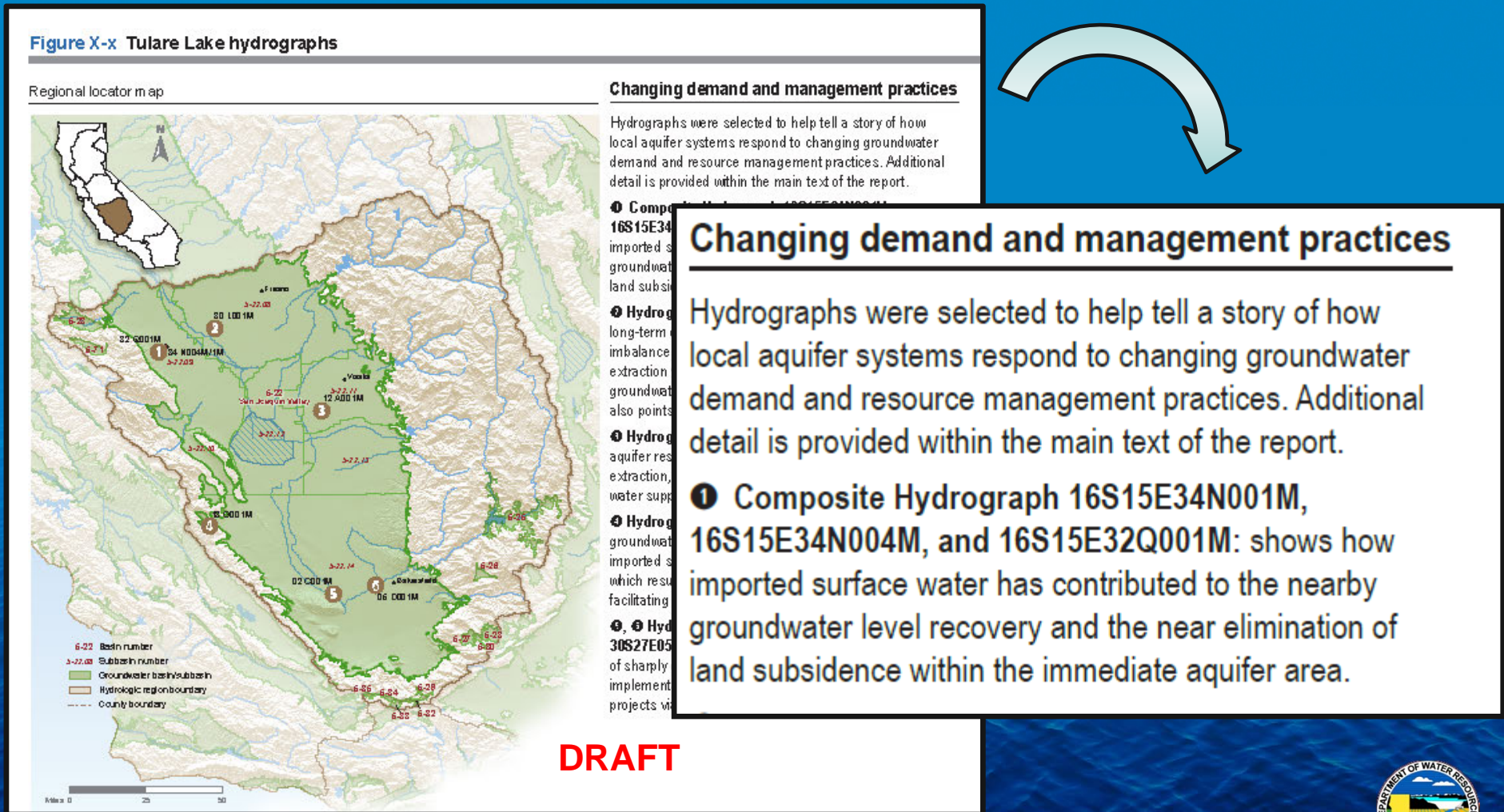


5.x.4. Aquifer Conditions (C.V. ONLY)

- Groundwater Level Trends

➔ Maps & Figures...

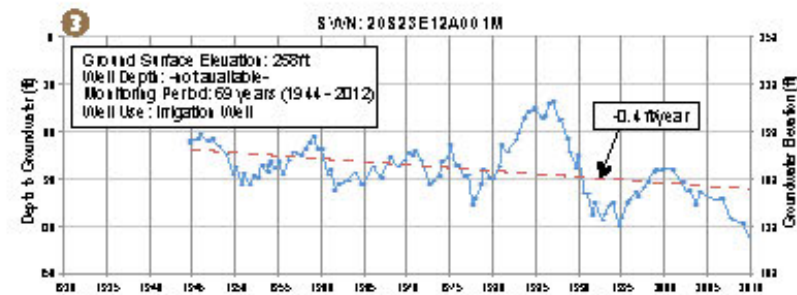
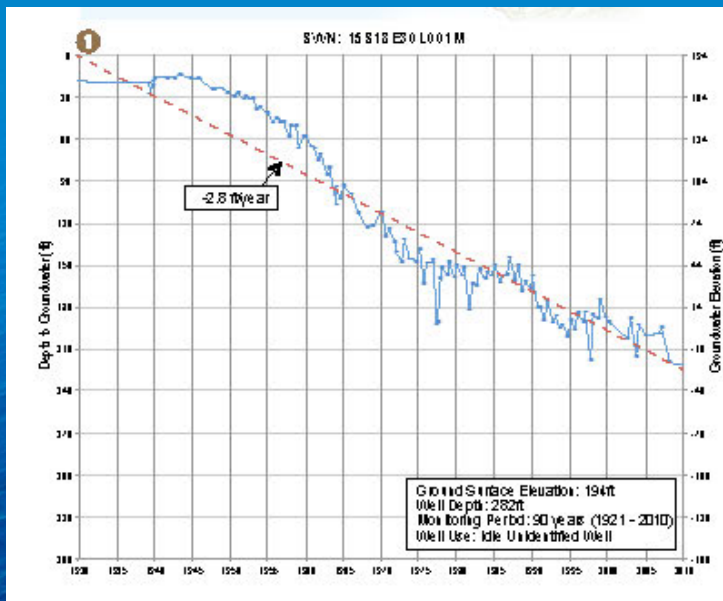
Tell a Story Hydrographs...(two page layout)



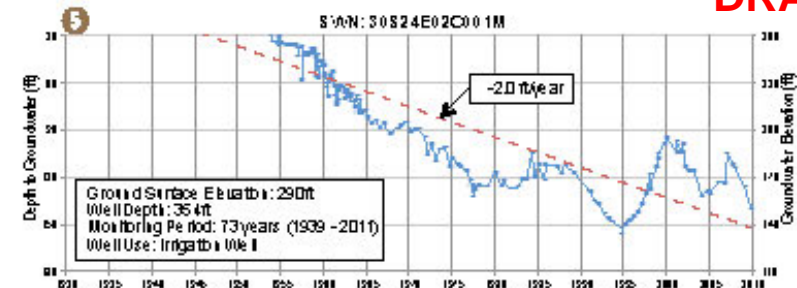
5.x.4. Aquifer Conditions (C.V. ONLY)

- Groundwater Level Trends

➔ Maps & Figures...
Tell a Story Hydrographs



DRAFT



Single vs Multiple Trend Lines ?

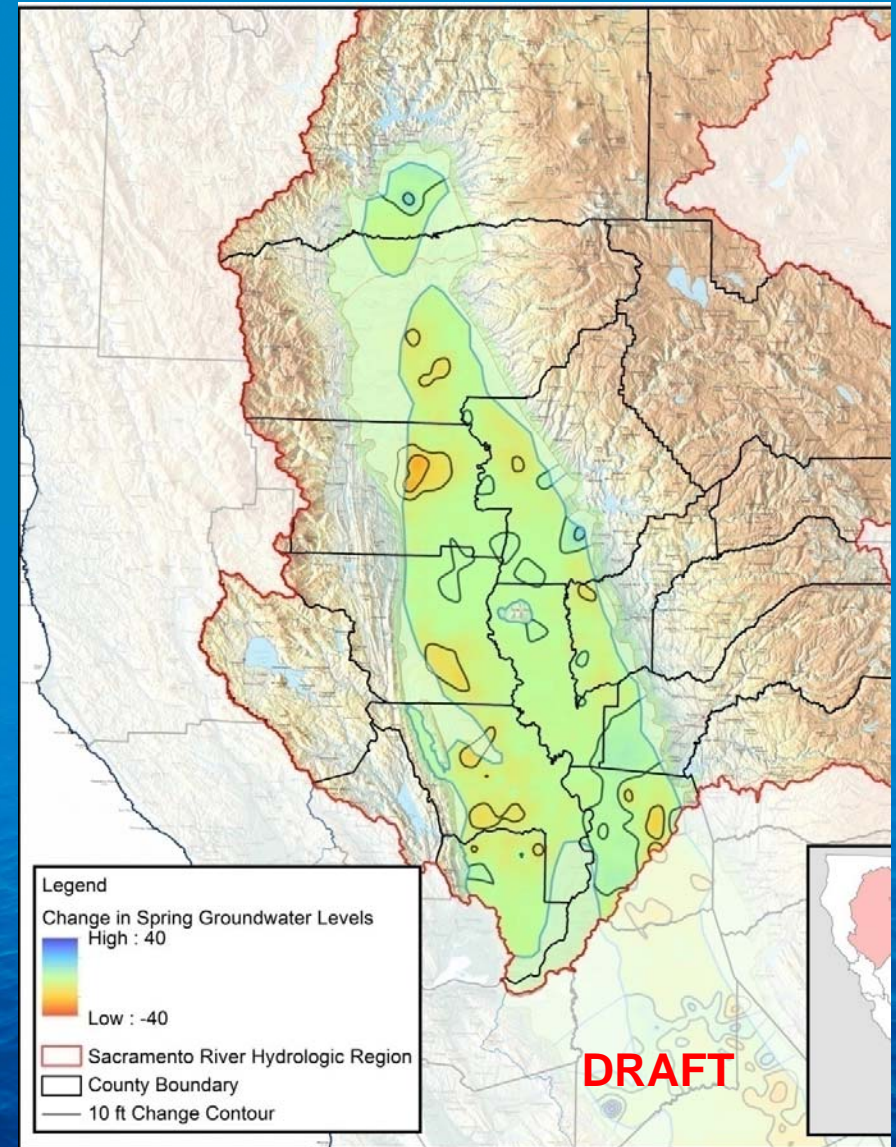
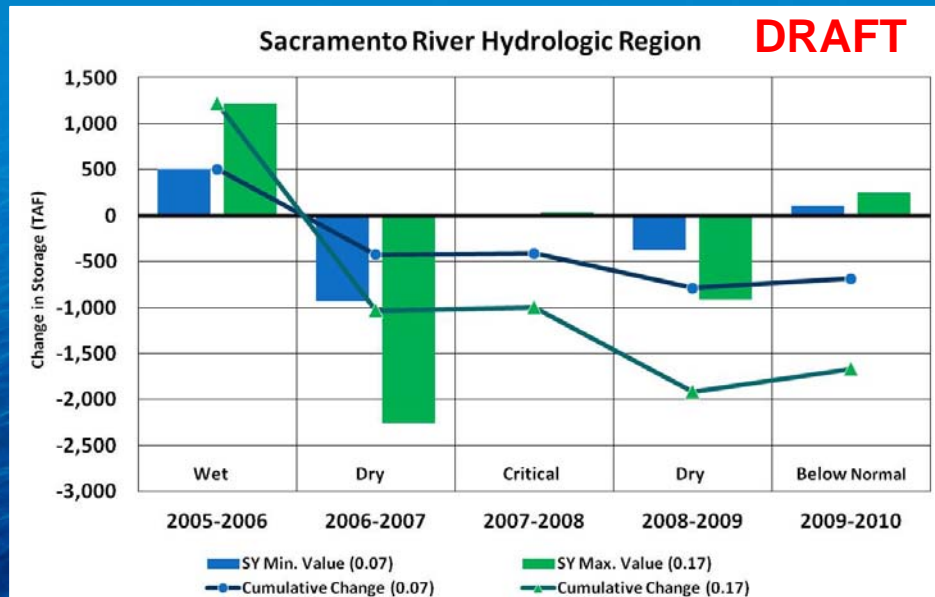


5.x.4. Aquifer Conditions (C.V. ONLY)

- Change in Groundwater Storage

➔ Tables, Maps, Figures, and
Technical Memorandum
(Appendix B)

Spring 2005 – 2010
Sacramento River HR



5.x.4. Aquifer Conditions (C.V. ONLY)

- *Change in Groundwater Storage*

➔ **Tables, Maps, Figures, and
Technical Memorandum
(Appendix B)**

Sacramento River HR Spring 2005 – 2010

Sacramento River Hydrologic Region			
Reporting Area (Acres):		3,070,427	DRAFT
Non-Reporting Area		1,052,799	
Period Spring - Spring	Average Change in GW Elevation (feet)	Estimated Change in Storage in TAF	
		Assuming Specific Yield = 0.07	Assuming Specific Yield = 0.17
2005-2006	2.3	500	1,220
2006-2007	-4.3	-930	-2,250
2007-2008	0.1	10	40
2008-2009	-1.8	-380	-920
2009-2010	0.5	100	250
2005-2010 (total)	-3.2	-690	-1,670
Note: GW elevation and change in storage estimates are calculated within reporting area only.			

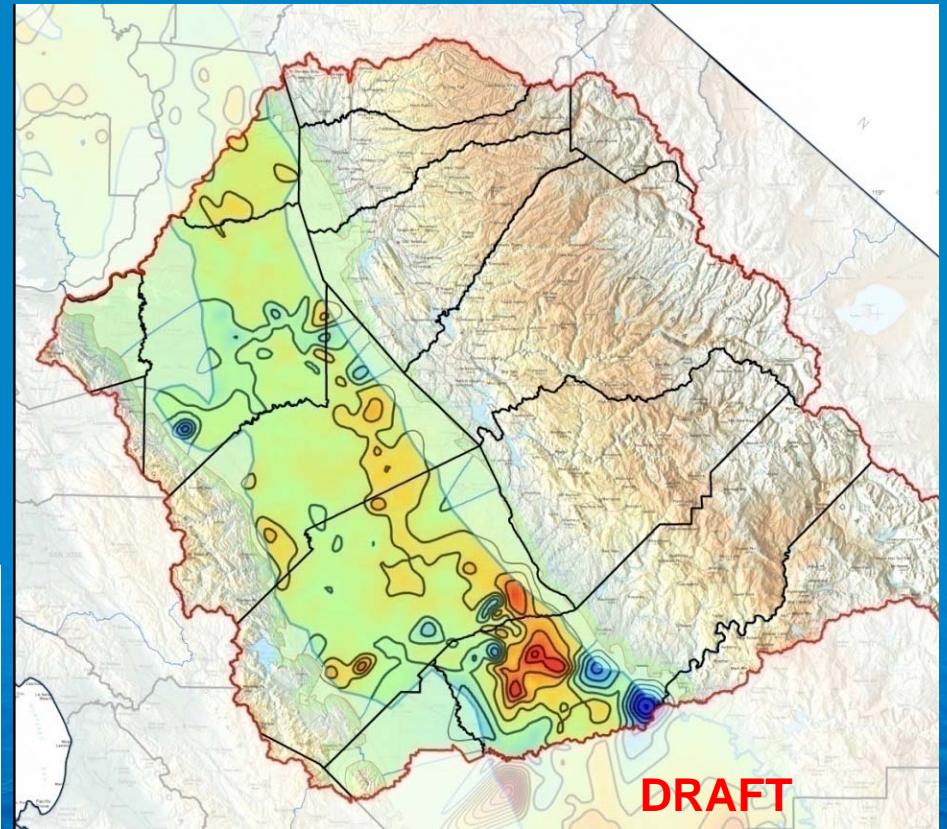
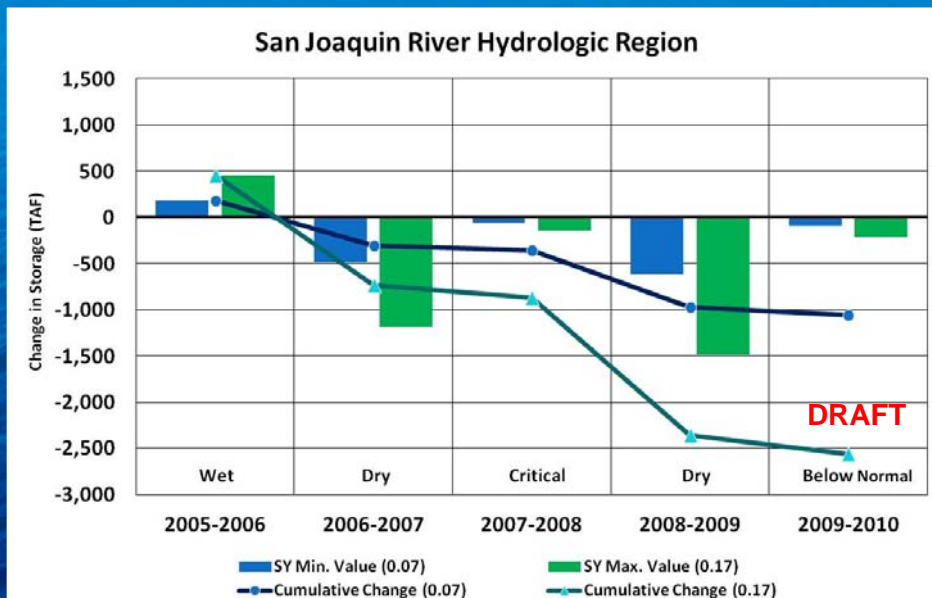


5.x.4. Aquifer Conditions (C.V. ONLY)

- *Change in Groundwater Storage*

➡ Tables, Maps, Figures, and
Technical Memorandum
(Appendix B)

Spring 2005 – 2010
San Joaquin River HR

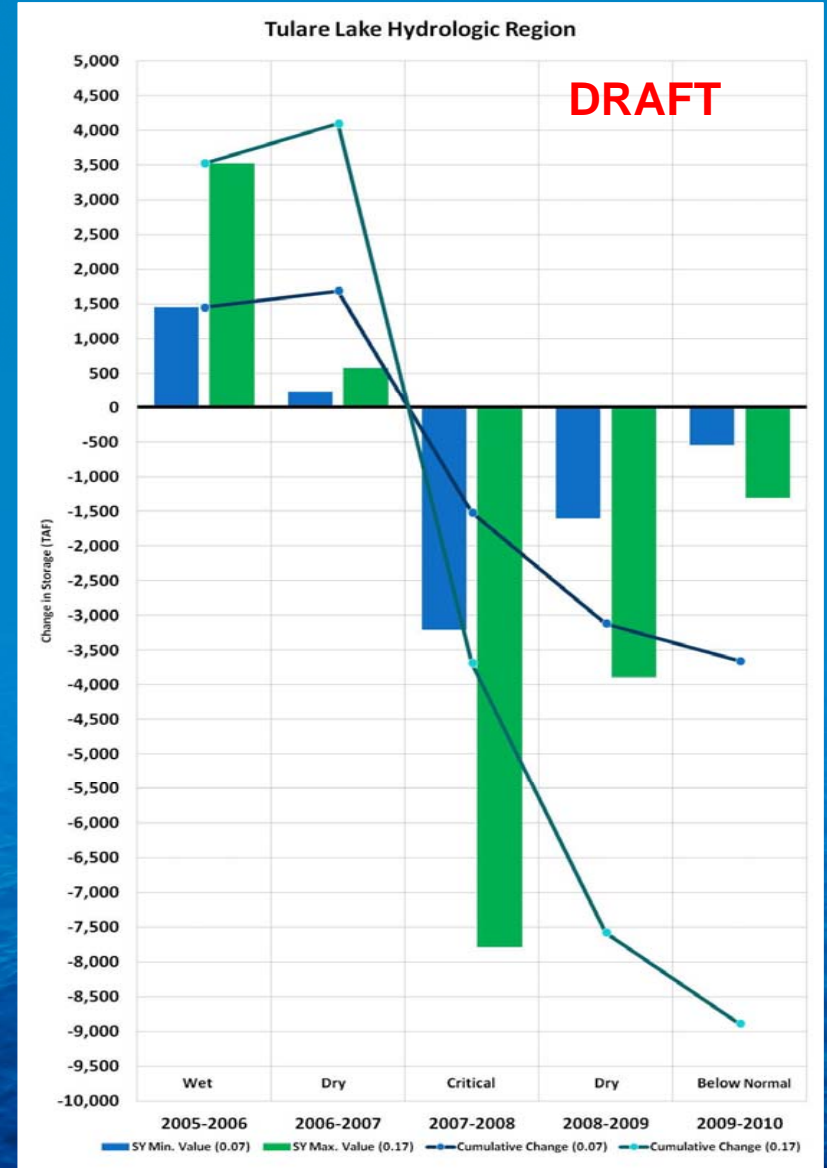
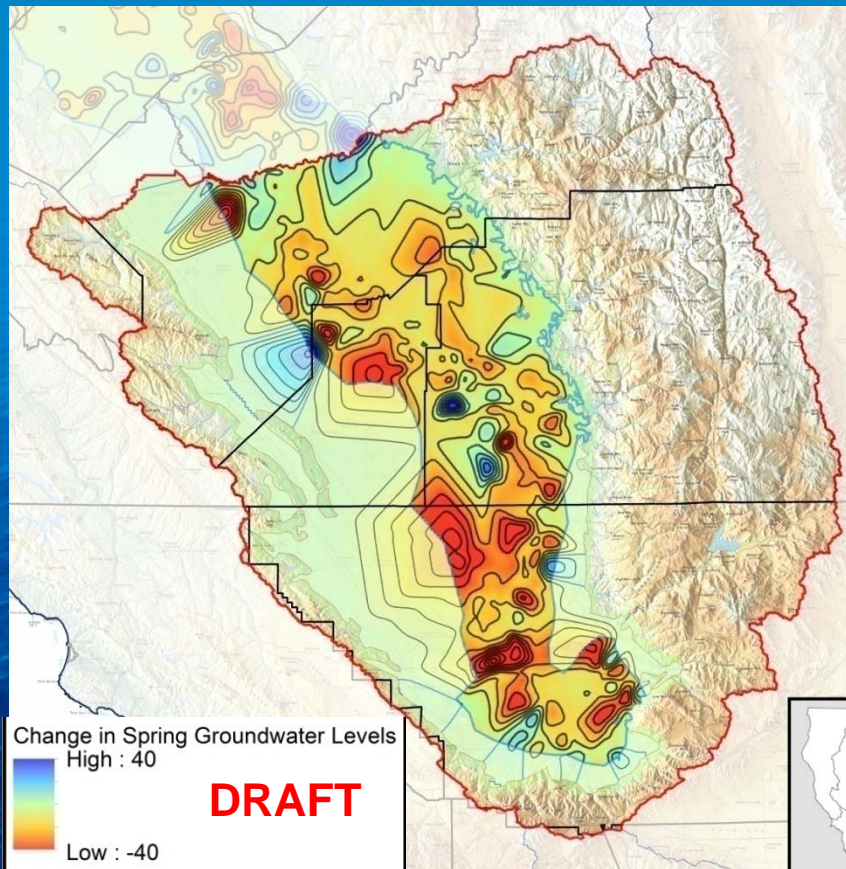


5.x.4. Aquifer Conditions (C.V. ONLY)

- Change in Groundwater Storage

Tables, Maps, Figures, and
Technical Memorandum
(Appendix B)
Spring 2005 – 2010

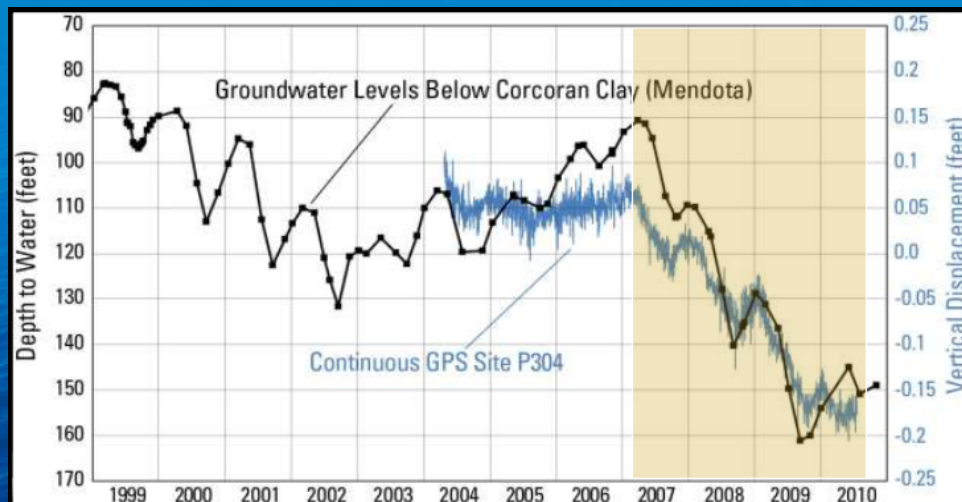
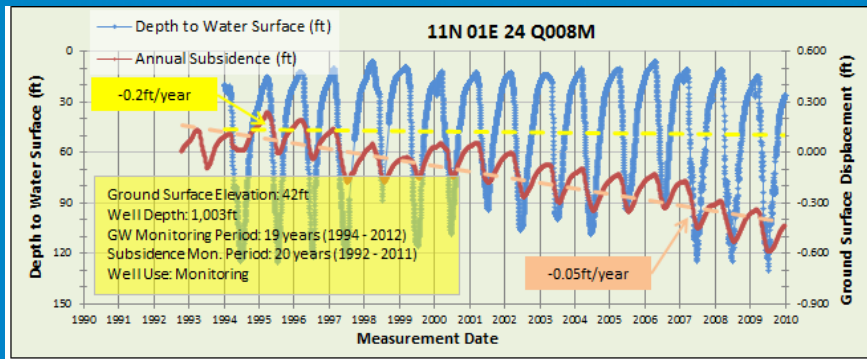
Tulare Lake HR



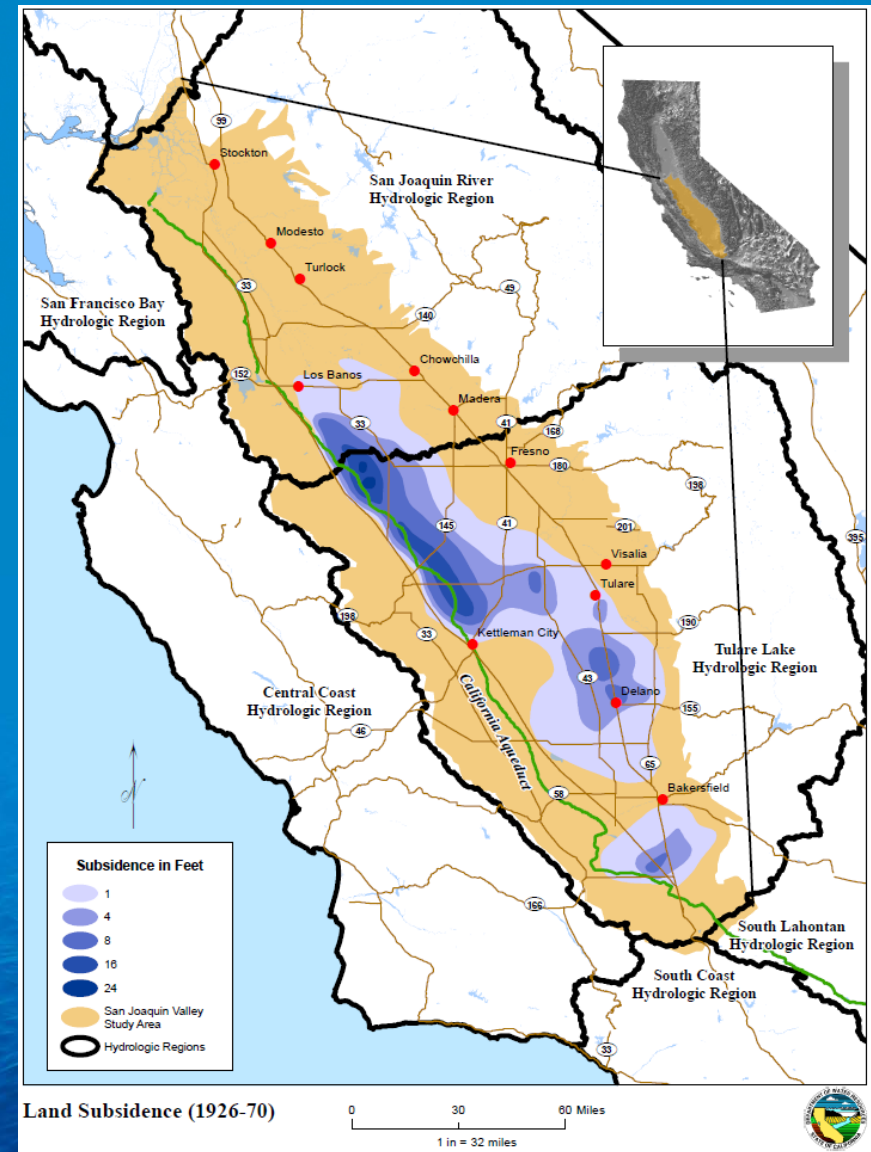
5.x.4. Aquifer Conditions (C.V. ONLY)

- Land Subsidence

Tables, Maps, Figures, and
(Historical Overview: Appendix E)



Reference: Figure from USGS Presentation (2011) Subsidence Resumes in the Central Valley. Data on figure: land elevation changes from UNAVCO Station P304 and water level data from Luhdorff and Scalmanini Consulting Engineers.

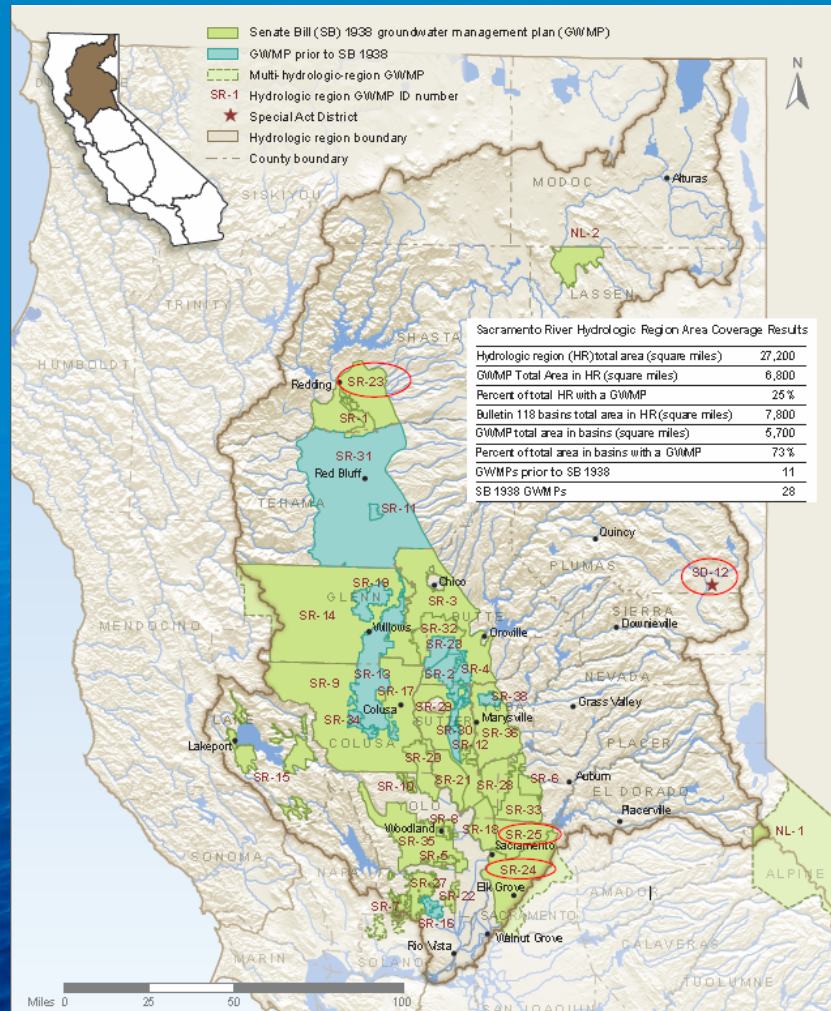


Adapted from Ireland, 1983.



5.x.5 Groundwater Management

- Groundwater Management Plans
- Groundwater Management Plan Assessment
- DWR/ACWA GW Management Survey



Mhp Label	Agency Name	GWMP Title	Date	County	Basin Number	Basin Name
SR-1	Anderson-Cottonwood Irrigation District	Anderson-Cottonwood ID GWMP	2006	Shasta	5-6.03	Redding Area - Anderson
				Tehama	5-6.04	Redding Area - Enterprise
					5-6.01	Redding Area - Bowman
					5-6.02	Redding Area - Rosewood
SR-2	Biggs-West Gridley Irrigation District	Biggs-West Gridley ID GWMP	1995	Butte	5-21.59	East Butte Subbasin
					5-21.62	Sutter Subbasin
SR-3	Butte County Department of Water and Resource Conservation	Butte County GWMP	2004	Butte	5-21.57	Vina Subbasin
					5-21.58	West Butte Subbasin
					5-21.59	East Butte Subbasin
					5-21.60	North Yuba Subbasin
SR-4	Butte Water District	Butte WD GWMP	1996	Butte	5-21.59	East Butte
				Sutter	5-21.62	Sutter
SR-5	City of Davis/UC Davis	City of Davis and UC Davis GWMP		Yolo	5-21.67	Yolo Subbasin
SR-6	City of Lincoln	City of Lincoln GWMP	2003	Placer	5-21.64	North American Subbasin

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5.x.5 Groundwater Management

- Groundwater Management Plans
- Groundwater Management Plan Assessment
- DWR/ACWA GW Management Survey



Tables, Maps, Figures, and

➤ Groundwater Basins

➤ 61,900 square miles

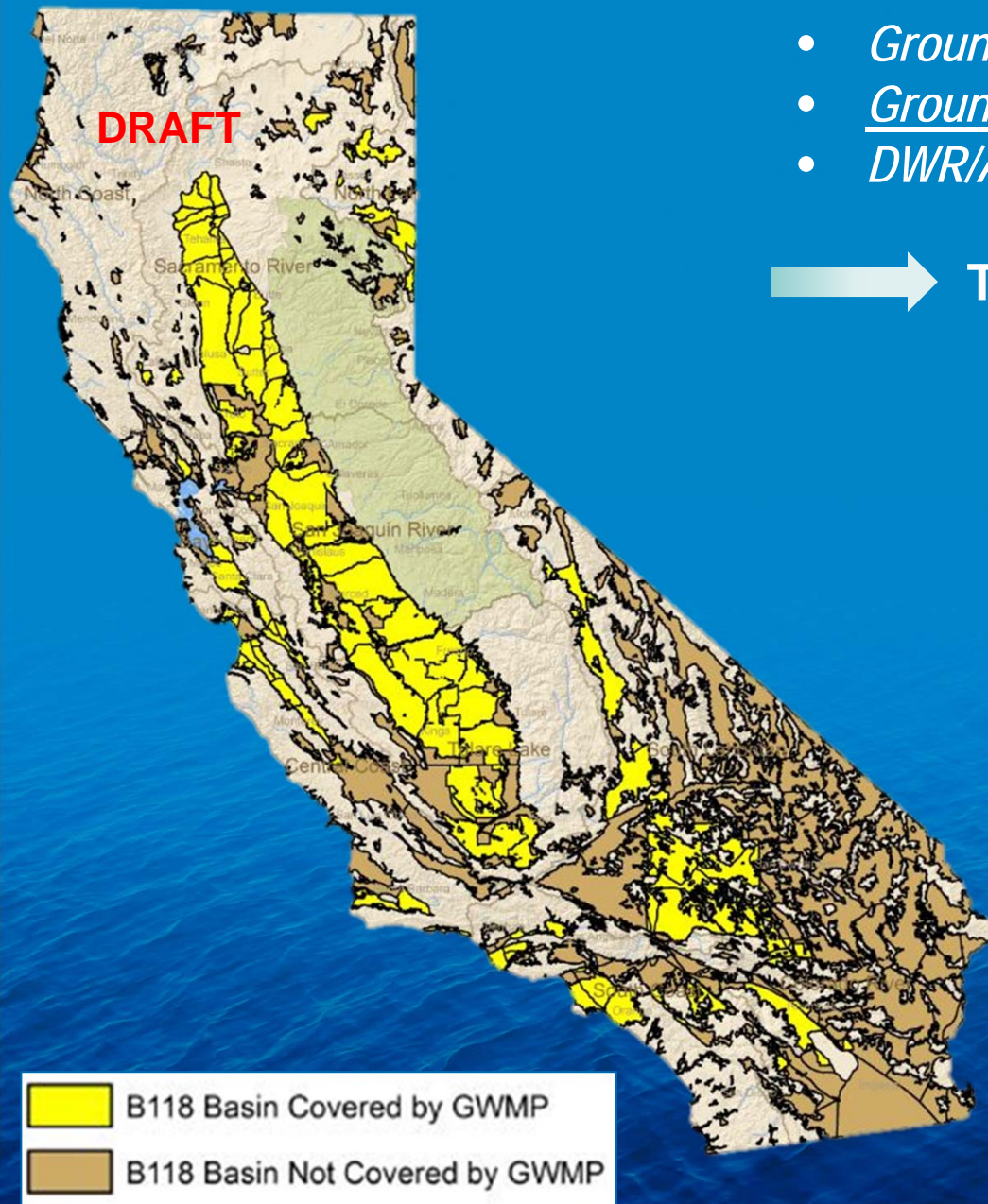
➤ GWMP Coverage

➤ 118 Plans

➤ Area Coverage

➤ 25,900 square miles

➤ 42% of GW Basin area



5.x.5 Groundwater Management

- Groundwater Management Plans
- Groundwater Management Plan Assessment
- DWR/ACWA GW Management Survey



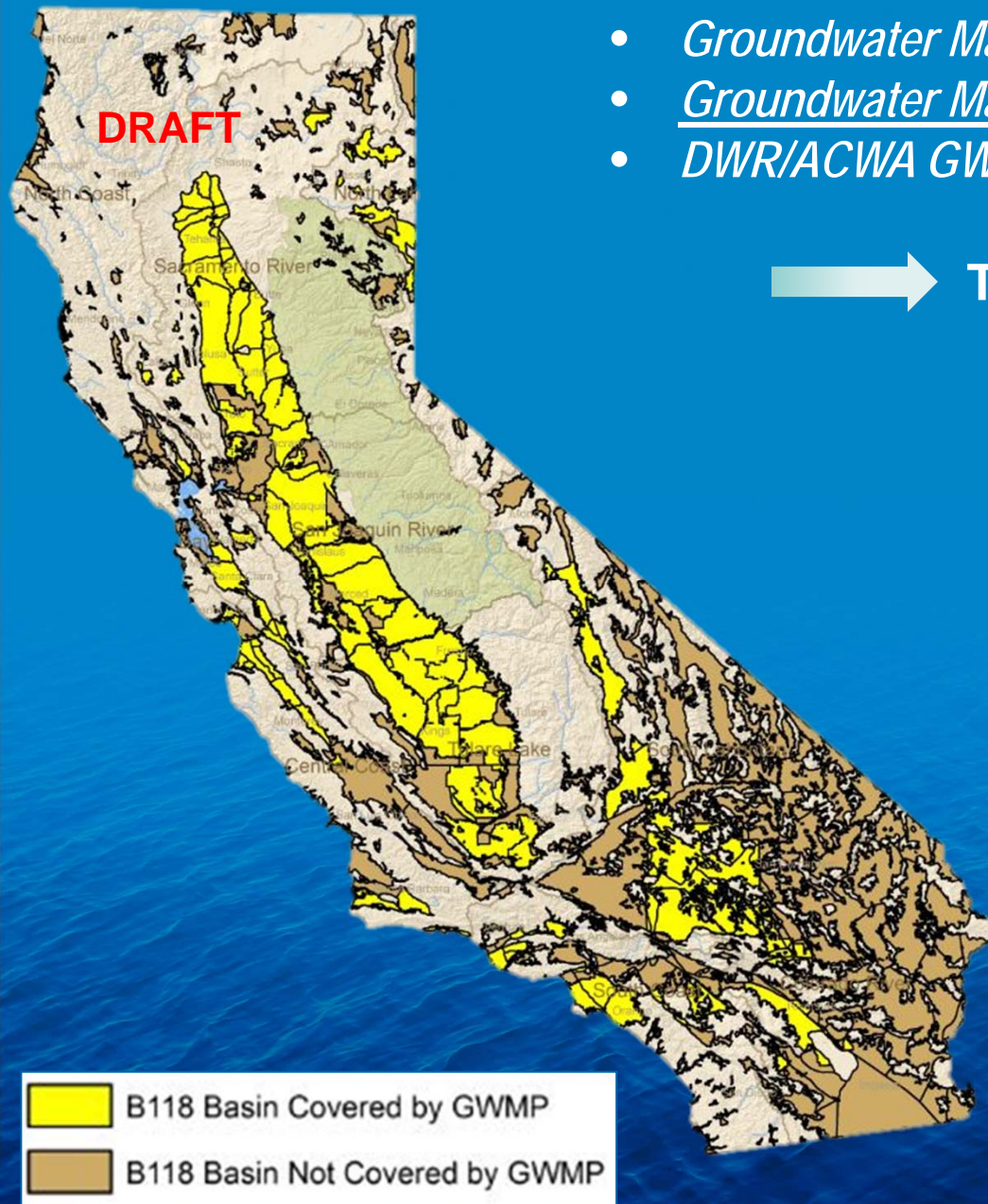
Tables, Maps, Figures, and

Post SB 1938 Plan (2002)

- GWMPs – 82 (70%)
- Coverage
 - 20,100 square miles
 - 32% of GW Basin area

Post SB 1938 plan w required components fully addressed

- GWMPs – 35 (43%)
- Coverage
 - 10,300 square miles
 - 17% of GW Basin area



5.x.5 Groundwater Management

- *Groundwater Management Plans*
- *Groundwater Management Plan Assessment*
- *DWR/ACWA GW Management Survey*

Assessment for GWMP Required Components

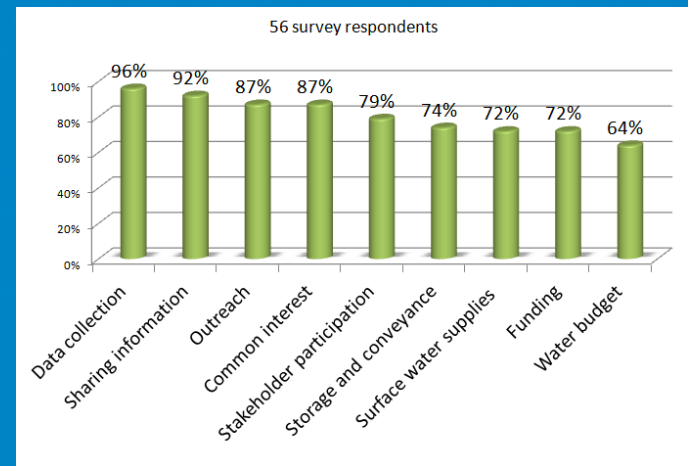
SB 1938 Required Components	Percent of plans that meet requirement
Met all required components, and subcomponents	46%
Basin Management Objectives	50%
BMO: Monitoring/Management GL	86%
BMO: Monitoring GO	89%
BMO: Subsidence	82%
BMO: SW/GW/GO interaction	57%
Agency Cooperation	96%
Map	79%
Map: Groundwater basin area	86%
Map: Area of local agency	89%
Map: Boundaries of other local agencies	75%
Recharge Areas (1/1/2013)	Not Assessed
Monitoring Protocols	50%
MP: Changes in groundwater levels	96%
MP: Changes in groundwater quality	86%
MP: Subsidence	93%
MP: SW/GW/GO interaction	50%

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5.x.5 Groundwater Management

- Groundwater Management Plans
- Groundwater Management Plan Assessment
- DWR/ACWA GW Management Survey



DWR/ACWA Survey Results for Key Components that helped with the Agencies Successful Plan

Key components that help produce a successful implementation	Respondents
Sharing of ideas and information with other water resource managers	11
Data collection and sharing	10
Adequate surface water supplies	10
Adequate regional and local surface storage and conveyance systems	10
Outreach and education	9
Developing an understanding of common interest	9
Broad stakeholder participation	9
Water budget	6
Funding	6
Time	6
Respondent supplied components	
Conjunctive Use	2
Numeric modeling of groundwater basin	2
Water supply management	2

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5.x.5 Groundwater Management

- Groundwater Ordinances

Sacramento River HR County Groundwater Ordinances

County	Groundwater Management	Guidance Committees	Export Permits	Recharge	Well Abandonment & Destruction	Well Construction Policies
Alpine	-	-	Y	-	Y	Y
Amador	-	-	-	-	Y	Y
Butte	Y	Y	Y	-	Y	Y
Colusa	-	-	Y	-	-	Y
El Dorado	-	-	-	-	Y	Y
Glenn	Y	Y	-	-	Y	Y
Lake	-	-	Y	-	Y	Y
Lassen	Y	Y	Y	-	Y	-
Modoc	-	-	Y	-	-	Y
Napa	-	-	-	-	Y	Y
Nevada	-	-	-	-	Y	Y
Placer	-	-	-	-	Y	Y
Plumas	-	-	-	-	Y	Y
Sacramento	-	-	Y	-	Y	Y
Shasta	-	-	Y	-	-	-
Sierra	-	-	Y	-	-	-
Siskiyou	-	Y	Y	-	Y	-
Solano	-	-	-	-	Y	Y
Sutter	-	-	-	-	Y	Y
Tehama	-	-	Y	-	Y	Y
Yolo	-	-	Y	DRAFT	-	-
Yuba	-	-	-		Y	Y



5.x.5 Groundwater Management

- Groundwater Adjudications

Statewide Adjudications



ID	Hydrologic Region	Court Judgment	Basin No.	County	Judgment Date	Watermaster and/or website
A-1	South Coast, Colorado River	Beaumont Basin	7-21.04, 8-2.08	Riverside	2004	Beaumont Basin Watermaster
A-2	South Coast	Chino Basin	8-2.01	Riverside, San Bernardino	1978	Chino Basin Watermaster
A-3	South Coast	Cucamonga Basin	8-2.02	San Bernardino	1978	not yet appointed; operated as a part of Chino Basin
A-4	South Coast	Central Basin	4-11.04	Los Angeles	1965	CA Department of Water Resources - Southern Region
A-5	South Coast	West Coast Basin	4-11.03	Los Angeles	1961	CA Department of Water Resources - Southern Region
A-6	Central Coast	Goleta Basin	3-16	Santa Barbara	1989	Goleta Water District

As of August 2012:

- 23 Adjudicated Basins
- Coverage
 - 6,900 square miles
 - 4% of California*



5.x.7 Conjunctive Management Assessment (details in Appendix D)

1. Inventory existing conjunctive use, recharge and groundwater banking projects
2. Determine future conjunctive management potential
3. Define program constraints
4. Identify Available Storage



Tables, Maps, Figures, and

Hydrologic Region	# Active Conjunctive Management Programs
North Coast	0
San Francisco Bay	4
Central Coast	5
South Coast	32
Sacramento River	3
San Joaquin River	5
Tulare Lake	37
North Lahontan	0
South Lahontan	2
Colorado River	1
TOTAL PROGRAMS	89



5.x.7 Conjunctive Management Assessment

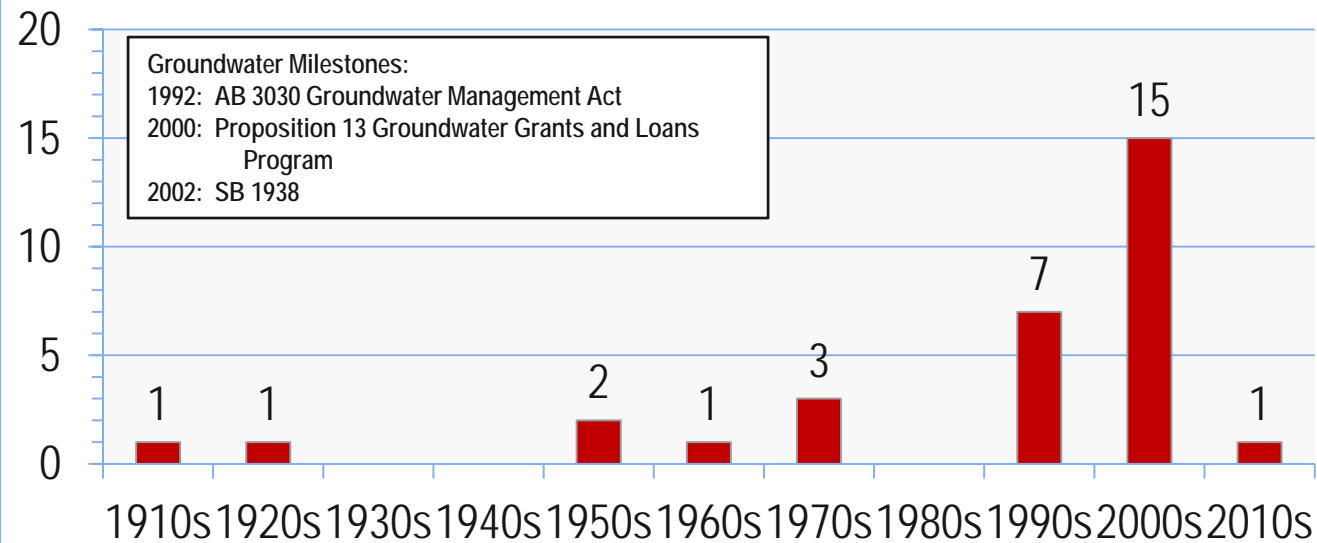
- DWR/ACWA Conjunctive Management Survey

➡ **Tables, Maps, Figures, and**

Survey Question Topic	# of Conjunctive Management Survey Responses per Hydrologic Region										
	North Coast	San Francisco Bay	Central Coast	South Coast	Sacramento River	San Joaquin River	Tulare Lake	North Lahontan	South Lahontan	Colorado River	TOTAL # Responses
TOTAL PROGRAMS	0	4	5	32	3	5	37	0	2	1	89
Location	--	4	1	24	3	2	3	--	1	1	39
Year Developed	--	4	1	18	3	1	2	--	1	1	31
Capital Cost	--	0	1	12	1	0	2	--	0	0	16
Annual Cost	--	2	1	12	0	0	2	--	1	1	19
Administrator	--	4	1	18	3	3	6	--	1	1	37
Project Capacity	--	4	1	16	3	2	6	--	1	1	34
Water Received	--	2	2	19	3	1	9	--	1	1	38
Put/Take Capacity	--	2	2	16	2	4	18	--	1	1	46
Recharge Method	--	3	2	19	3	5	18	--	1	1	52
Goals/Objectives	--	0	2	18	2	2	11	--	1	1	37
Constraints	--	0	0	13	1	1	8	--	1	1	25

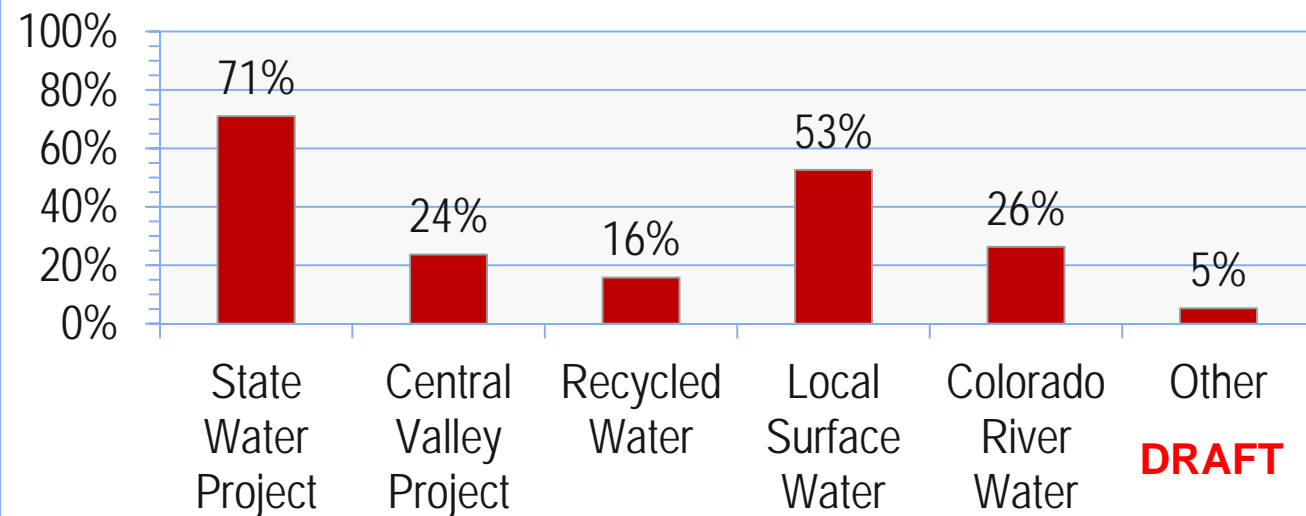
5.x.7 Conjunctive Management Assessment

- *DWR/ACWA Conjunctive Management Survey*



Projects Developed
per Decade

31 out of 89 programs
reporting data



Source of Recharge
Water

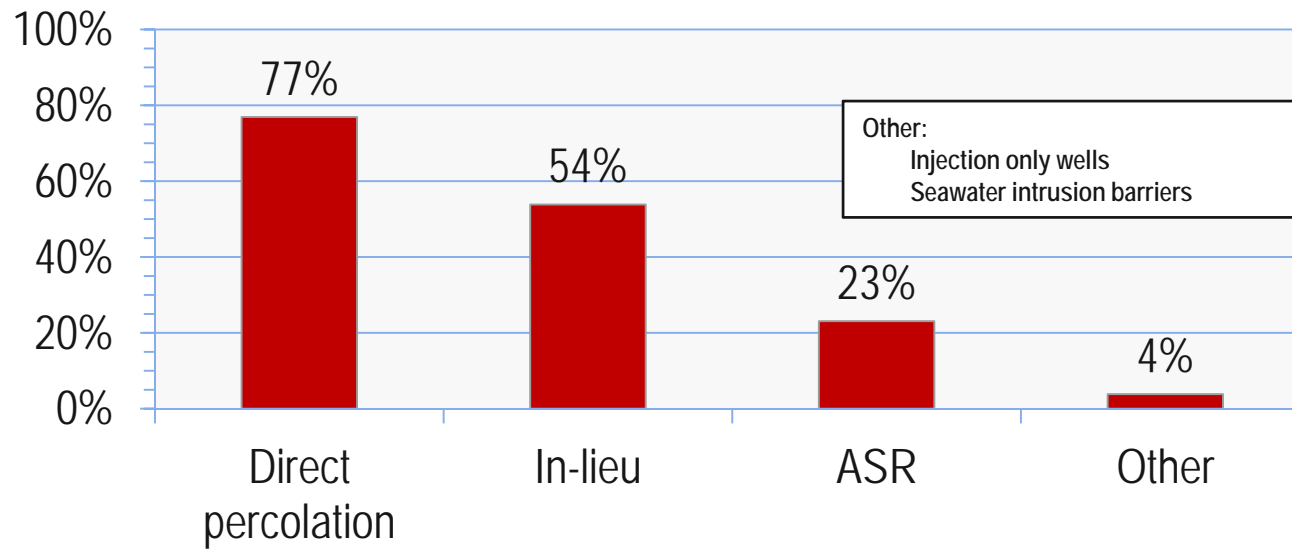
38 out of 89 programs
reporting data

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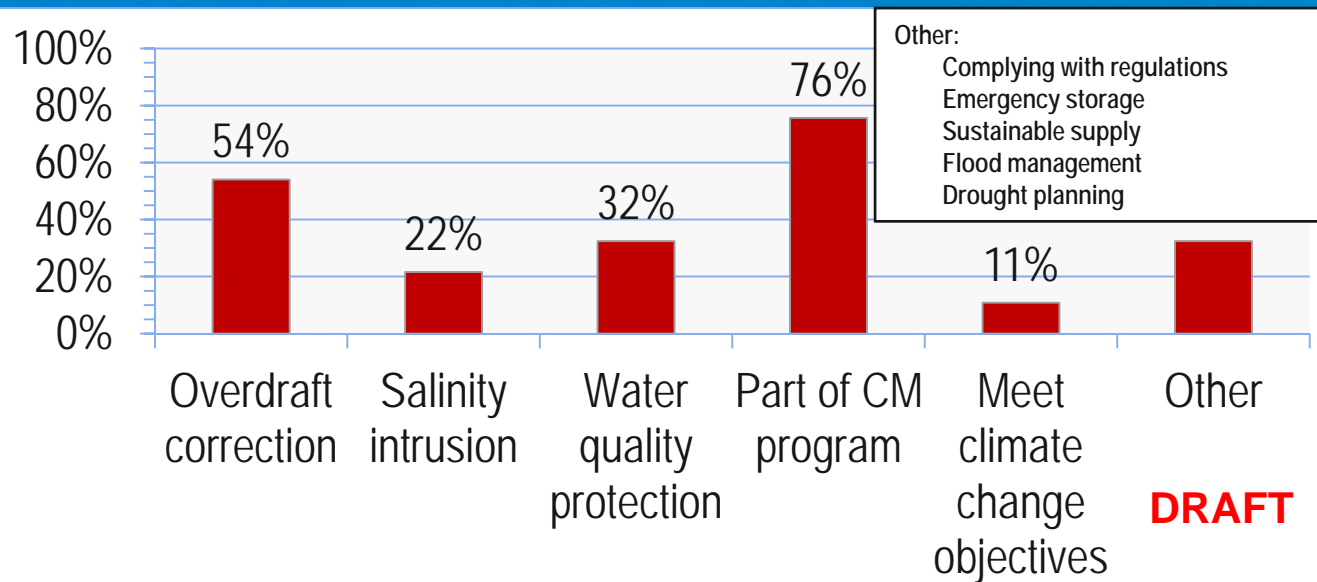
5.x.7 Conjunctive Management Assessment

- DWR/ACWA Conjunctive Management Survey*



Method of GW Recharge

52 out of 89 programs reporting data



Program Goals & Objectives

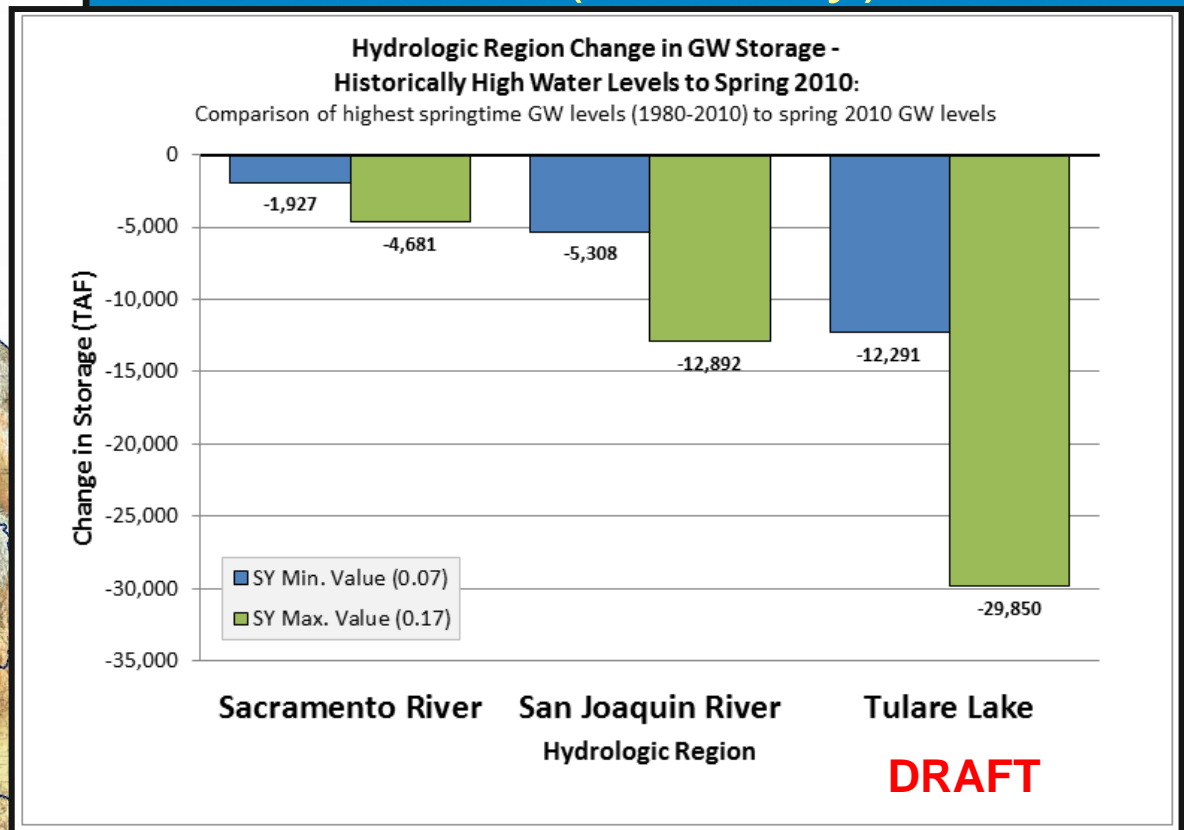
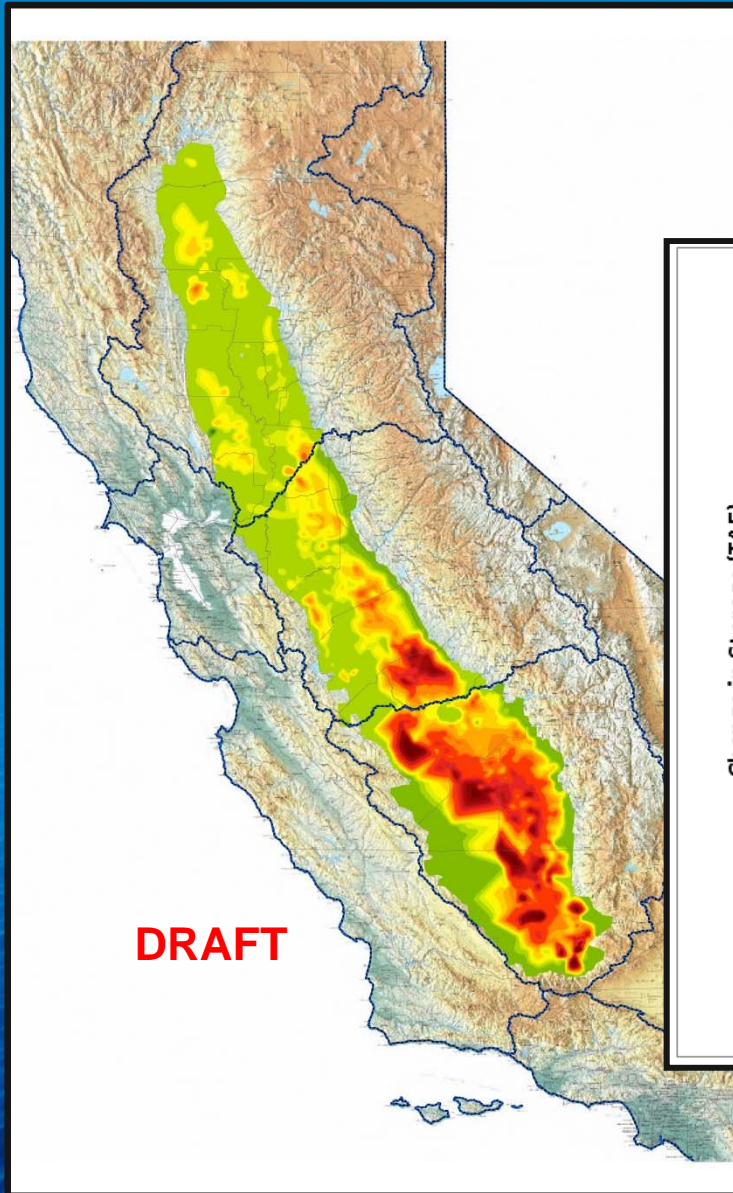
37 out of 89 programs reporting data

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5.x.7 Conjunctive Management Assessment

Available Aquifer Storage (CV Only)



Groundwater Content Enhancement

In summary

Paint a picture about
California's groundwater



- ☐ Aquifer system
- ☐ Groundwater conditions
- ☐ Groundwater management practices

Identify gaps



- ☐ Data
- ☐ Monitoring
- ☐ Management

Make recommendations



- ☐ GW mgmt guidelines & BMPs
- ☐ GW mgmt plan acceptance process
- ☐ GW mgmt plan reporting
- ☐ State agency policy alignment
- ☐ Resource needs for analysis



GROUP DISCUSSION TOPICS

California's Groundwater Update 2013

Statewide/HR Content Review

1. Report Review

- a. What are your general thoughts about the outline and the contents of the report?
- b. What would you add to the outline and content?
- c. What would delete from the outline and content?
- d. Please provide your specific suggestions to revise sections of the report.

2. Graphics Review

- a. Please provide your feedback and suggestions for improvement on the included tables, charts, and maps.
- b. What graphics (tables, charts, and maps) do not add value to the report and that you recommend deleting?
- c. What other graphics would you recommend adding to improve presentation of data and information?

Questions?



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